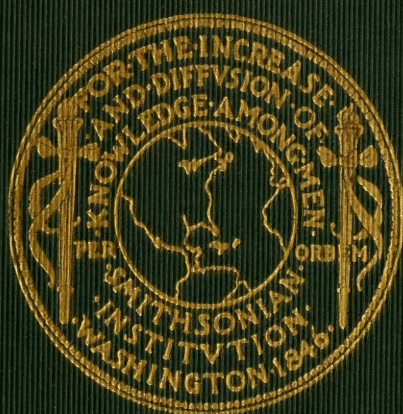




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SMITHSONIAN INSTITUTION
UNITED STATES NATIONAL MUSEUM

BULLETIN 183

ARCHEOLOGICAL INVESTIGATIONS IN
PLATTE AND CLAY COUNTIES
MISSOURI

BY

WALDO R. WEDEL

With Appendix

SKELETAL REMAINS FROM PLATTE AND
CLAY COUNTIES, MISSOURI

By T. DALE STEWART



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The scientific publications of the National Museum include two series, known, respectively, as *Proceedings* and *Bulletin*.

The *Proceedings* series, begun in 1878, is intended primarily as a medium for the publication of original papers, based on the collections of the National Museum, that set forth newly acquired facts in biology, anthropology, and geology, with descriptions of new forms and revisions of limited groups. Copies of each paper, in pamphlet form, are distributed as published to libraries and scientific organizations and to specialists and others interested in the different subjects. The dates at which these separate papers are published are recorded in the table of contents of each of the volumes.

The series of *Bulletins*, the first of which was issued in 1875, contains separate publications comprising monographs of large zoological groups and other general systematic treatises (occasionally in several volumes), faunal works, reports of expeditions, catalogs of type specimens, special collections, and other material of similar nature. The majority of the volumes are octavo in size, but a quarto size has been adopted in a few instances in which large plates were regarded as indispensable. In the *Bulletin* series appear volumes under the heading *Contributions from the United States National Herbarium*, in octavo form, published by the National Museum since 1902, which contain papers relating to the botanical collections of the Museum.

The present work forms No. 183 of the *Bulletin* series.

ALEXANDER WETMORE,
Assistant Secretary, Smithsonian Institution.

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FOREWORD

The report that follows is based primarily on data gathered for the U. S. National Museum in course of field work in western Missouri during the summers of 1937 and 1938. The first season's investigations were an outgrowth of correspondence with J. M. Shippee, an amateur collector of long experience residing in North Kansas City. This correspondence was begun in February 1937, while plans were being formulated for extended work in Kansas, and the investigations in Platte County, Mo., were in a sense incidental. Actual excavations at the Renner village site occupied 4 weeks between May 28 and June 28, resulting in the delineation of an archeological complex whose existence in the Missouri Valley had heretofore escaped general scientific notice.

During the following winter and spring, several communications from Mr. Shippee invited my attention to additional mound and village remains near Kansas City. The mounds offered a possibility for identifying certain puzzling types of burial structures, whereas the village sites suggested still another cultural complex of which only fragmentary hints had previously been noted along the Missouri. Accordingly, work was resumed in the locality on May 21 and was closed on August 7, 1938.

The 1937 party included Marvin Kivett, University of Nebraska, and the following as volunteers: Kenneth Orr, Columbia University; Gates Slattery, University of Maryland; and Hugh Stabler, Washington, D. C. Kivett and Slattery were also members of the 1938 expedition, which further included Mr. Shippee; Richard Cooke, Harvard University; and Karl Schmitt, George Washington University. Orr and Cooke were in charge of all surveying and mapping during the 1937 and 1938 seasons, respectively.

Alvin Peterson, National Bureau of Standards, volunteered 2 weeks' assistance in 1938, beginning on July 20. Without exception these men gave good account of themselves and contributed their full share toward making the work a success. I must express my appreciation especially for the unfailingly excellent services rendered at all times by Kivett, my assistant during both seasons.

It is a genuine pleasure to acknowledge here our indebtedness to Mr. Shippee, whose intelligent interest, whole-hearted cooperation, and thorough familiarity with the region involved were prime factors in the initiation and prosecution of the investigations. Shippee's cooperation has continued since termination of the field work, in the form of frequent lengthy and commendably full letters describing

subsequent findings and observations locally. To Mr. Shippee and to his family goes much of the credit for making our stay personally pleasant as well as scientifically successful.

Numerous other individuals and concerns contributed in various ways to success of the work in the field. I am particularly grateful to the following: Mr. and Mrs. Leslie Renner, of Parkville, Mo., for freely permitting excavation on their property and for other courtesies; Ralph Henneman, formerly of North Kansas City, for guiding us to a number of other sites and for arranging an aerial reconnaissance; Transcontinental & Western Air and Bureau of Air Commerce officials at Kansas City for cooperation in securing aerial photographs; O. Pearl, Charles and Mrs. C. W. Babcock, Ray Nolan, Henry Wehe, C. A. Steed, Herman Kisker, W. W. Young, and Great Lakes Pipeline Co. officials at Kansas City, for permission to excavate on owned or leased properties; H. M. Trowbridge, of Bethel, Kans., for voluntary assistance in excavation and for making available information on related remains in Wyandotte County, Kans.; A. H. Hansen, of Kansas City, for loan of pottery vessels and skeletal materials and for presentation of other restorable specimens dug from mounds later worked by us, and H. M. Kleifeld, superintendent of highway construction, for presenting to us various archeological objects uncovered during road-building operations.

The helpful interest of other parties not named above but who were instrumental in facilitating our field investigations is hereby acknowledged.

For criticisms and suggestions as this report progressed, I am indebted to F. M. Setzler and Dr. T. D. Stewart, of the National Museum, and to Henry B. Collins, Jr., of the Bureau of American Ethnology. Identification of various biological and geological specimens was made by the following members of the National Museum staff: Dr. Alexander Wetmore, bird remains; Dr. Remington Kellogg, mammalian bones; Dr. Doris M. Cochran, reptile bones; Dr. J. P. E. Morrison, mollusks; C. V. Morton, plant remains; and E. P. Henderson, minerals. Dr. Volney H. Jones, of the Ethnobotanical Laboratory, University of Michigan, identified plant materials from the Steed-Kisker site.

R. G. Paine, aide in the division of archeology, drew figures 1, 4, 5, 6, 10, 17, 18, and 20. besides revising from field copies the maps and diagrams shown as figures 2, 3, 7, 8, 9, 11, 12, 13, 14, 15, 16, and 19.

WALDO R. WEDEL.

May 15, 1942.

ARCHEOLOGICAL INVESTIGATIONS IN PLATTE AND CLAY COUNTIES, MISSOURI

By WALDO R. WEDEL

THE ENVIRONMENTAL BACKGROUND

THE REGION wherein are situated the sites about to be considered lies in western Missouri along the great bend of the Missouri River between the town of Weston, in Platte County, and the mouth of Fishing River in Ray County. Fishing River empties into the Missouri about 338 miles by water above the Mississippi; Weston is 80 miles farther upstream and 8 or 10 miles above Leavenworth, Kans. As thus defined, the locality centers about Kansas City at the confluence of the Kansas River with the Missouri, 379 miles above the mouth of the latter. Above Kansas City the general course of the Missouri is southward by east, separating Leavenworth and Wyandotte Counties, Kans., from Platte County, Mo. Below Kansas City the stream flows eastward through Missouri, leaving Clay County to the north and Jackson County on the south.

Physiographically the district lies at the southern margin of the Dissected Till Plains, which in turn comprise one section of the Central Lowland province.¹ The Missouri Valley below Kansas City, and west of it the Kansas River to the mouth of the Blue near Manhattan, Kans., mark the approximate southernmost limit reached by the older continental ice sheets. To the north, the terrain owes much of its present form to glacial activity and subsequent erosional processes. Thick deposits of glacial drift and loess overspread the older land surface, forming a broad flat till plain. Most of the original surface of this newer constructional plain, dating from the Kansan glaciation, has been destroyed by erosion, though remnants of the uplands still exist as gently rolling prairies and crop lands between the heads of the various minor drainage systems. Relief varies from 100 to nearly 300 feet, with the larger streams, locally at grade, meandering sluggishly through valleys up to 200 feet deep. Except

¹ The present description of the physiographic setting is based on Fenneman, 1938; Emerson, 1912; Marbut, 1896; Hinds and Greene, 1917. Additional details on the Missouri River may be found in Greene, 1921, and in the Report from Chief of Engineers, 1926, House Doc. No. 594; on climate, in the Climatic Summary of the United States, Section 54.

to the trained observer, the Dissected Till Plains of northwestern Missouri, in a submature to mature stage of erosion, do not differ markedly from immediately adjoining portions of the unglaciated rolling Osage Plains to the south.

The Missouri is by far the largest stream in the region. Its course along the great bend represents a readjustment of an earlier drainage pattern whereby preglacial streams got around the ice. South of the Nebraska State line, where the river forms the northeastern boundary of Kansas, it has carved out one of the newer segments of its valley. Owing to this geologic youthfulness and to the resistant character of the underlying rock, the stream here pursues an erratic course through a narrow alluvium-filled trough only 2 to 4 miles wide. The picturesque loess-capped bluffs of Carboniferous limestones and shales bordering the valley assume a curiously even front below Leavenworth, where the river cuts across hard limestone formations. At Kansas City the Missouri enters the old preglacial valley of the Kansas River, which it follows eastward to the mouth of the Grand. Throughout this section the valley is generally broader and the bluff lines are less regular.

The immediate banks of the Missouri, where not formed by the bluffs, are low, sandy, and tree-lined and for some hundreds of yards back from the river's edge are subject to overflow. At Kansas City the valley floor is approximately 745 feet above sea level, with the elevation between bluff lines varying only a few feet. Higher terraces or second bottoms are generally absent. Before its partial confinement by extensive dikes, revetments, and piling, the sand-clogged channel changed frequently, cutting across the necks of meanders to leave oxbow lakes, sloughs, and marshes marking its former course. Aftermaths of such shiftings may be seen in our immediate area in Duck, Burns, Browns, and Cooley Lakes.

The stream itself is 1,000 to 3,000 feet wide and has an average velocity of about 3 miles an hour, though at high stages this may rise to 6 miles. There is a very uniform gradient of slightly over 0.8 foot a mile. Two annual floods occur, in April and in June, at which time the adjacent bottoms are submerged. The low-water stage comes late in fall and winter. Between these alternate low and high stages the mean fluctuation of the water surface at Kansas City is very nearly 15 feet. But the extreme recorded differential is much greater than this—34.6 feet—from which it may be inferred correctly that tremendous floods sometimes sweep the valley. Records show that in 1903 the high-water mark at Quindaro pumping station, in the valley north of Kansas City, Kans., was 752.4 feet, sufficient to spread across the entire bottoms from bluffs to bluffs. With its innumerable tributaries, the Missouri drains a vast territory, and there is no reason to doubt that equally remarkable if economically less devastating

inundations have taken place in the distant past. In the absence of safe terraces, these floods must have constituted a serious threat to the welfare and peace of mind of primitive peoples in search of habitable locations. Very probably it was recognition of this fact that prompted native groups in this locality to settle in the safer side valleys and to avoid generally the banks of the Missouri.

As for the immediate locale (fig. 1), the principal tributaries of the Missouri are the Platte, currently entering from the north about 4 miles below Leavenworth; the Kansas at Kansas City; the Big Blue, debouching between Kansas City and Independence; and the Little Blue, which mouths opposite Cooley Lake. Though not the largest, the Platte is of greatest interest in connection with the present investigations. Rising in southwestern Iowa and fed by an intricate system of creeks in Nodaway, Andrew, Buchanan, and Platte Counties, its lower reaches are characterized by a well-developed alluvial flood plain about a mile wide bordered by occasional terraces and more or less continuous bluffs. The valley is much less regular than that of the Missouri, and the bluff lines are exceedingly ragged; here and there they recede farther than usual because of faster lateral erosion where the present stream crosses ancient drift-filled preglacial valleys. The Platte flows at grade in an intrenched channel often 10 to 25 feet below the valley bottoms. Though low-lying and flat, as shown by the extremely sinuous route taken across them by the river, these bottoms are not marshy, nor do they flood readily. At times of high water in the Missouri, as during the annual floods, the water backs 10 or 15 miles up the Platte. At present the river issues from the bluffs at Farley to enter the Missouri about a mile to the southwest, but within the past century its mouth has been 10 or 12 miles lower and within a mile of Parkville.

The Kansas for some miles above its mouth has a flat-floored valley nearly as wide as the Missouri. The bottoms, however, are firmer, the bluffs lower and less abrupt, and occasional terraces offer safe habitation sites. The Big and Little Blue, not examined for archeological remains, have smaller but equally attractive timbered and well watered valleys.

Lesser tributaries leave the uplands to break through the Missouri bluffs at intervals of a few miles. Those from the west and south are often short and intermittent and flow in narrow steep-walled valleys. From the north come several sizable creeks. Beginning below the Platte these include, in order, Brush, Rush, Line, Shoal, and Rush Creeks and finally Fishing River. With exception of the last, they vary in length from 5 to 10 miles. In their upper portions they flow in shallow valleys with gently sloping sides that grade into the rolling upland prairies; farther down, the valleys are deeper, wider, flat-

floored, and crooked, often with fine terraces and enclosed by bordering bluffs. All these creeks are, or formerly were, perennial, with excellent springs along their banks, and their beds are frequently rocky. Fishing River, rising as a network of creeks mostly in Clay County, is an underfit stream reexcavating a broad detritus-filled valley identified with the former course of a large northerly tributary of the preglacial Kansas River. The valley bottoms along all these streams consist almost wholly of rich alluvium washed in from the glacial and loessial deposits on the adjoining uplands, thus differing materially from the partly extraneous and often sandy soils in the trench of the Missouri.

Interfluvial areas present considerable local diversity of terrain but relief nowhere exceeds 300 feet. Most striking are the bluffs rising abruptly from the edges of the Missouri River flood plain to heights of 200 feet or more, except at the mouths of side valleys. Thick loess deposits form ridges paralleling the flood plain, highest east of the Missouri, with progressively lower ridges discernible as one leaves the valley farther behind. The valley rim has been deeply dissected, as have the borders of most of the permanent tributaries, so that a rugged zone 3 to 6 miles wide flanks the streams. Farther back, where post-glacial erosion has not yet become so pronounced, are gently rolling uplands from which long fingers extend to within a few miles of the Missouri. These have been developed on loessial and glacial soils of great fertility, which nearly everywhere form a thick mantle over the underlying Pennsylvanian limestones and shales. Within the area included in figure 1, the uplands are best shown in southeastern Platte and western Clay Counties (maximum elevation 1,050 feet) and a few miles west of the Missouri in Kansas.

For a graphic picturization of the locality and its wildlife resources as in essence it must have appeared to pre-white inhabitants, we may turn to the journals of the first American exploring expedition up the Missouri. Although this goes back less than a century and a half, the contrast with present conditions is striking. By June 23, 1804, Lewis and Clark (Thwaites, 1904a, pp. 56-64) had passed the mouth of Fishing River, and on that day, while downriver winds held the party in camp, Capt. Clark and his hunters killed two deer and a bear in what is now Clay County. Clark further states: "I observed great quts. [quantities] of Bear Signs, where the[y] had passed in all Directions thro the bottoms in Serch of Mulberries, which were in great numbers in all the bottoms thro which our party passed. . ."

Next day the party was camped above the mouth of the Little Blue, and we learn that "the countrey on each side of the river is fine interspersed with Praries [prairies], in which immense herds of Deer is Seen, on the banks of the river we observe numbers of Deer watering and feeding on the young willow . . ."

On the 25th: "The Praries come within a short distance of the river on each Side which Contains in addition to Plumbs Raspberries &c vast quantities of wild apples, great numb^s. of Deer are seen feeding . . ."

On the 26th: ". . . camped, in the Point above the Kansas River I [Clark] observed a great number of Parrot queets [Carolina parakeets] this evening . . ."

On the 27th, still at this camp on or near the present site of Kansas City, Kans., the explorers noted that "the Countrey about the mouth of this [Kansas] river is very fine on each Side as well as North of the Missouri the Bottom in the Point is low and overflows for 250 yards . . ."

Here, too, on the 28th, "our hunters killed Several Deer and Saw Buffalow . . ."

For June 30 we have the following comments: "A verry large wolf came to the bank and looked at us this morning, pass^d the mouth of a Small river 10 m^s. above the Kansas called by the french Petite River Platte (or Shoal river) from the number of falls in it. . . . Some of the party who went up told that the lands on this Small river is good, and on it several falls well calculated for mills . . . emence numb^s. of Deer on the banks, Skipping in every direction, the party killed nine Bucks on the river & Bank today, The Countrey on the SS [starboard side, i. e., left bank] between the Shoal River and Missouris is indefferent Subject to overflow, that below and on the LS [larboard side] is high and appears well timbered . . ."

On July 1, in the vicinity of present Leavenworth, there were "paccawn [pecan] Trees Seen on the S. S. Deer and Turkeys in great quantities on the bank. . ." Above this point, geese (including goslings), swans and cygnets, and elk were noted, besides fine growths of walnut, oak, honeysuckle, buckeye, and great quantities of summer and fall grapes, berries, and roses.

A few years later, in 1808, Capt. Clark led a detachment of dragoons overland up the Missouri from St. Charles to establish Fort Osage in what is now northeastern Jackson County (Gregg, 1937). Three days (65 miles) out of St. Charles, he noted abundance of turkeys, partridges, grouse, and deer. On the fourth day elk were seen, and on the fifth, after crossing Cedar Creek between Boone and Calloway Counties, there were signs of bison. Soon after, near present New Franklin, a bison was killed. Throughout, bear and elk were plentiful.

Bradbury (Thwaites, 1904b) ascended the river in the spring of 1811, and somewhere near the mouth of Naduet (Nodaway) River he "discovered that pigeons were in the woods . . . and in a few hours

shot two hundred and seventy one . . . [They were] in prodigious flocks [which] will cover an area several acres in extent, and the birds are so close to each other that the ground can scarcely be seen . . .”

One further authority may be cited in support of the astonishing quantity of game, particularly deer, recorded in these narratives. In 1818 three companies of riflemen under Capt. Martin spent the winter on Isle au Vache, just above present Leavenworth. Lacking rations, they were compelled to support themselves principally by hunting. By the following spring, according to James (1823, vol. 1, p. 111), “between two and three thousand deer, beside great quantities of bears, turkeys, etc. had been taken. . . .”²

For the most part these observations were made incidentally by parties passing through the region. Had they searched out the tributaries and hinterland in Platte and Clay Counties, their game lists would undoubtedly have included beaver, otter, muskrat, fox, wildcat, raccoon, squirrel, rabbit, and numerous other forms. In any event, it is abundantly clear that well into the historic period, as probably long before, the timbered belt traversed by the Missouri must have been a veritable hunter’s paradise.

Today, most of the suitable sections of the region are under cultivation. Corn and wheat are the principal crops, but locally there are extensive truck gardens supplying the Kansas City and Leavenworth trade. Some tobacco is grown in sheltered sunny side valleys. Hardwoods cover the steeper bluffs and valley slopes, some of the narrower ridges, and the immediate banks of most of the water-courses, but they comprise only a remnant of the magnificent forest belt that formerly clothed the bluffs zone to a distance of several miles from the Missouri. Oak, elm, walnut, hickory, sycamore, ash, maple, hackberry, locust, cottonwood, and willow were the principal but by no means the only species present. No accurate data are available for tracing out the former line between forest and prairie, but it seems likely that the ragged margins of the latter frequently approached quite closely the larger valleys, particularly west of the Missouri.

Climatically the region is characterized by a wide range of temperature and much annual, as well as seasonal, variation in precipitation. At Kansas City, where accurate meteorological data go back to 1889, the temperature ranges from -22° to 113° F. Such extremes, however, are unusual. Both the winter cold and the summer heat are tempered by periods of comparatively moderate weather, while spring and autumn generally are characterized by mild temperatures. Annual precipitation at Kansas City since 1889 has aver-

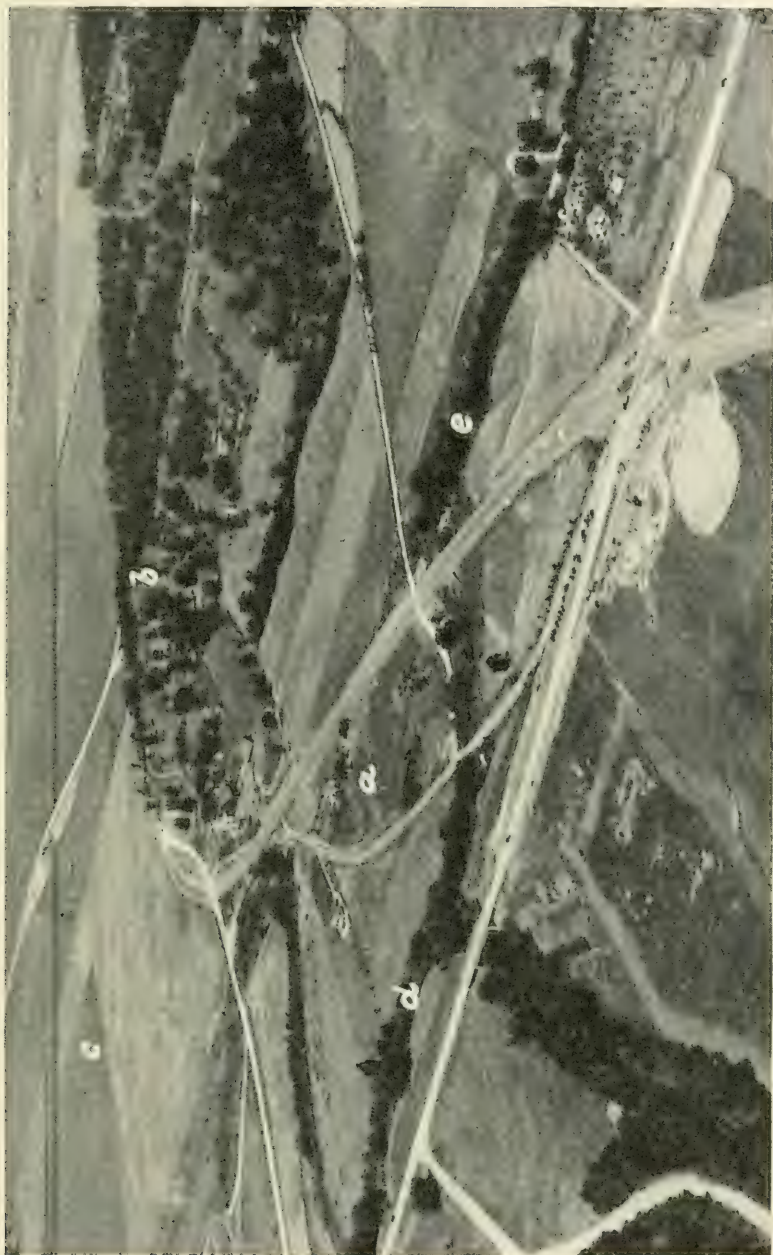
² Cf. Maximilian, 1843, p. 124, who located this camp farther upstream on Nodaway Island.

aged slightly over 37 inches, with a minimum of 21.5 inches (in 1936) and a maximum of 50 inches. Nearly 70 percent of this falls in the six months from April to September, inclusive. In spring and summer there are frequent violent thunderstorms, occasionally accompanied by hail. There is a frost-free growing season of 180 days or more, sufficient to insure maturing of the cereal and truck crops. Hot drying winds are uncommon, and prolonged droughts such as have periodically devastated large portions of the western plains are virtually unknown.

Viewed as the habitat of primitive horticultural peoples, in part dependent upon the results of the chase, the district offered many inducements. The valley of the Missouri, dominated by a capricious river and subject to floods, was too unreliable to invite permanent settlement. But on tributaries such as the Platte, where wide flood-free slopes and benches directly overlook the stream, and to an equal or greater degree on the smaller terrace-bordered creeks, the situation was ideal. Here man could build on the immediate banks close to never-failing supplies of good water; wood, shelter, game, and arable ground were at hand for the taking. A variable but not too trying climate plus a sufficiency of rainfall and extremely fertile soils that retain moisture through the growing season encouraged a settled horticultural manner of living. With all this to offer, it is scarcely to be wondered that the terraces on the attractive side valleys just off the Missouri were freely utilized by prehistoric man. As for the Missouri River, the trench through which it flows may be visualized as primarily a route for trade, travel, and migration—the artery, so to speak, through which mainly flowed the quickening impulses from district to district along its course.

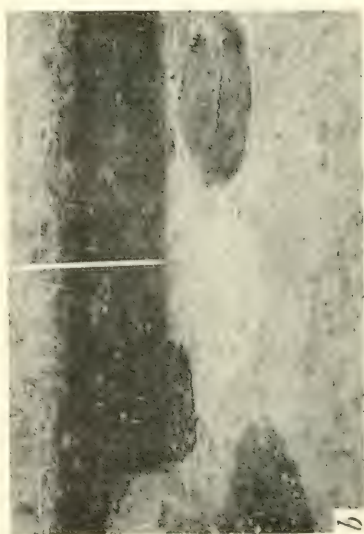
HISTORICAL AND ETHNIC SETTING

It is not known at what early date European traders or adventurers first ascended the valley of the lower Missouri. So far as the available documentary evidence shows, however, only hearsay information from the Indians was extant prior to about 1700. Since the last quarter of the seventeenth century the few semipermanent native settlements along the stream appear to have belonged to tribes representing the Dhegiha and Chiwere division of the Siouan stock. Marquette's map of 1673 (Thwaites, 1900, p. 108) shows the Ouchage (Osage) west of a stream doubtless meant to be the Mississippi, with the *SEMESS SRTT* (Missouris) to the northwest; the Kansa are located west of the former, southwest of the latter. Delisle, in 1718, placed "les Missouris" on the south bank just above the "R. a la Mine," with "les Cansez" above the mouth of the Kansas River and immediately below the confluence of the "Petit Riv. des Cansez" (Independence



AERIAL VIEW OF RENNER SITE AND SURROUNDINGS, FROM THE NORTHEAST.

a, Renner mound; *b*, Renner village site; *c*, Missouri River bottom; *d*, Line Creek; *e*, Juniper Branch.



VIEWS AT RENNER SITE.

a, Looking north toward village terrace at center. Line Creek at left; *b*, topsoil and culture stratum removed, showing pits 11, 29, and 14; *c*, looking south along baseline trench.

Creek, Kansas?) with the Missouri. DuPratz in 1757 designated all the region between the Mississippi and the great bend of the Missouri, and for a distance beyond to the southwest, "Pays des Missouris." The "Cansez G^d. Village" is indicated on the Missouri above Kansas River, with the Osages far to the south and southwest—partly on the river bearing their name, partly on a southerly tributary of the lower Kansas. These maps and scattering bits of information from other sources would suggest that the Missouri formerly laid claim to much of the lower valley where their villages stood. The Osage country lay mainly to the south and southwest, apparently centering on the Osage River. Kansa territory began at the Missouri above the mouth of Kansas River, whence it extended indefinitely westward into the bison plains. The area with which the present archeological researches are concerned thus lies in what was essentially Siouan territory since early historic times.

There is no direct evidence from which the time of arrival of these three tribes in the region may be accurately fixed, but the Marquette map of 1673 indicates that, as distinct groups, they were then already in their approximate historic locations. According to tribal traditions (Dorsey, 1886; McGee, 1897, pp. 191-196; Swanton and Dixon, 1914, pp. 385-389), the Osage, Kansa, Omaha, Ponca, and Quapaw migrated westward to the mouth of the Ohio, whence the Quapaw turned south while the others moved up the Mississippi and on to the Missouri. Near the mouth of the Osage another separation took place: The Omaha and Ponca traveled toward the northwest, the Osage to the southwest up the Osage River, and the Kansa continued westward up the Missouri to the Kansas River and beyond. The Missouris, along with the Iowa and Oto, separated from their parent Winnebago on Green Bay, Wis., and traveled southward down the Mississippi to the Iowa River. Here the Iowa remained for a time, while the remainder of the group went on to reach eventually the mouth of Grand River on the Missouri. From this point the Oto, after a quarrel, proceeded farther up the Missouri; the Missouris remained and were visited by French traders early in the eighteenth century. The Missouris are also supposed to have dwelt for a time on the Mississippi near the present site of St. Louis. Whether they preceded or followed the Osage and Kansa into this region is not known. As to the time involved, it may be noted that Oñate's encounter with the Escansaques in 1601 has been suggested as the earliest historical allusion to the Kansa, which, if correct, would mean that at least the Dhegihan groups were probably on hand by that date. This identification of the nomadic Escansaques with the semihorticultural Kansa, however, seems highly dubious if not wholly untenable.

By 1724 the lure of furs and, secondarily, a desire to forestall Spanish designs on the mineral resources of Missouri had brought about the establishment of a French trading post by Bourgmond at a Missouri village near the mouth of Grand River. This, Fort Orleans, was abandoned in or soon after 1726 (Houck, 1908, pp. 258-268). It was superseded by another among the Kansa, whose village then seems to have stood just north of present Fort Leavenworth, Kans., at Salt Creek on the right bank of the Missouri. The name, date of founding, and abandonment of this station are unknown, though it was operating in 1757 (Margry, 1867, p. 41).³

Less than a half century later, all the villages mentioned in the early documents had been given up. When Lewis and Clark ascended the river they found no inhabited sites anywhere along its banks in the 500 miles below the present southern boundary of Nebraska. Subsequent archeological explorations in the same area have revealed evidence of scarcely a dozen postcontact native villages, in striking contrast to the great profusion of precontact remains. An explanation for this apparent aversion by recent tribes to an otherwise unexcelled environment is given by Lewis and Clark (Thwaites, 1904a, p. 47), whose observations are worth quoting at some length for the hints they offer of conditions during the protohistoric period.

On June 13, 1804, the party passed "two Creeks called the round bend Creeks between those two Creeks and behind a Small Willow Island in the bend is a Prairie in which the Missouries Indians once lived and the Spot where 300 [200] of them fell a sacrifice to the fury of the Saukees, this nation (Missouries) once the most numerous nation in this part of the Continent now reduced to about 30 f^{cs} [fires, i. e., families] and that few under the protection of the Otteaus [Ottos] on R. Platt who themselves are declining. . . ."

Two days later, on June 15, they "camped on the SS nearly opposit the antient Village of the Little Osarges and below the Ant^t Village of the Missouries both Situations in view within three M^s of each other, the Osage were Settled at the foot [of] a hill in a butifull Plain, which extends back quite to the Osage River, in front of the Vilg: next to the river is an ellegent bottom Plain which extends several miles in length on the river in this low Prairie the Missouries lived after they were reduced by the Saukees at their Town Some Dist^o below. The little osage finding themselves much oppressed by the Saukees and other nations, left this place and built a village 5 M^s from the Grand Osage Town, about years ago a few of the Missouries

³ At this time, Bougainville says, the French were trading with the Osages and Missouris, "nations bordering one another . . .," 80 leagues up the Missouri.

accompanied them, the remainder went to the Otteaus on the River Platt. . . ."⁴

Difficulties with other tribes, stronger or better armed, are also suggested by Lewis and Clark in explanation for the removal of the Kansa from the Missouri (op. cit., p. 67). Thus, at Independence Creek near the present Doniphan, Kans., where the tribe lived in 1724, before moving to the vicinity of Leavenworth, Clark observes that "the nation must have been numerous at the time they lived here, the Cause of their moveing to the Kansas River, I have never heard, nor can I learn; war with their neighbors must have reduced this nation and Compelled them to retire to a Situation in the plains better Calculated for their defence, and one where they may make use of their horses with good effect, in persueing their enemy. . . ."

Perhaps the prospect of better beaver hunting and retreat of the bison herds to the west were contributing factors to this shift.

After 1800 white men became increasingly active on the lower Missouri and in the region centering at the present site of Kansas City (Union Historical Co., History of Jackson County, Mo., 1881, pp. 376 seq.). In that year Pierre Chouteau established a trading post at Randolph Bluffs, opposite and about 3 miles below the present Kansas City. In 1808, Fort Osage (or Clark) was built on the south bank of the river just below where Sibley now stands, to be abandoned in 1827 when Fort Leavenworth was founded as a United States military post. Chouteau's post in the bottoms, controlled by the American Fur Co., was destroyed by flood in 1825, and the next year it was transferred to higher ground on the south side of the Missouri. It became the nucleus for a small but thriving French settlement, still chiefly interested in the fur and Indian trade. In 1831 the growing volume of commerce over the Santa Fe Trail brought Independence into being, and then Westport Landing at the mouth of the Kansas. The greater convenience and better natural facilities of the latter in steamboat-to-wagon transfer eventually made it the center of activity. As the natural entrepot for the expanding trade beyond the Missouri, its name was changed to "Kansas," then to "Town of Kansas," and finally to Kansas City.

Admitted to the Union in 1821, Missouri at that time had as its western boundary "a meridian line passing through the middle of the mouth of the Kansas river where the same empties into the Missouri river." In the irregular triangle lying west of this line, between it and the Missouri, the Iowa, Sac, Fox, and other tribes retained

⁴ The Missouri and Osage village sites referred to in these passages are located with relative exactness by the explorers. The recent discovery by University of Missouri archeologists of several post-European village sites in northern Saline County, Mo., at or very near the location given by Lewis and Clark, is noteworthy because of the exceptional opportunity they offer toward a definition of the protohistoric material culture of two important Siouan tribes (see also Berry and Chapman, 1941).

hunting and camping rights, besides trading at the posts therein situated. The attractive and fertile lands were too much for the nearby Missourians to resist, and by 1831 squatters were encroaching in what is now Platte County. This led to endless bickering and some bloodshed between Indians and whites, and the latter raised an increasingly insistent clamor for annexation of the disputed territory. In 1836-37, by purchase and treaty, the strip passed out of the hands of the tribes and as the Platte Purchase (Neuhoff, 1924, pp. 307 seq.) was added to the northwestern corner of the State of Missouri. Its southern tip became Platte County, which, with Clay County on the east, contains a majority of the sites considered in this paper.

PREVIOUS ARCHEOLOGICAL WORK

It may be supposed that the accelerating growth of modern communities about the junction of the Kansas and Missouri Rivers, with their transformation of the original land surface into streets, railroads, farms, and building sites, must have revealed occasional traces of prehistoric man even in the early years of white settlement. So far as published records are any indication, however, no interest seems to have been manifested in such remains prior to 1876. In that year, Judge E. P. West read a paper before the Kansas City Academy of Science in which he called attention to several finds of chert implements, pottery fragments, and other vestiges of pre-white industry at several points now within the limits of greater Kansas City (West, 1877a, pp. 198-199). One of these locations was in an excavation made "in the widening of Twelfth Street near its junction with Woodland Avenue" where "large quantities of flint chippings, arrowheads, stone axes and broken pottery were found at a depth varying from six inches to eighteen inches beneath the surface." This, and "one place near the fairground in Wyandotte County, Kansas," were the only spots where "prehistoric pottery" had come to light. Two types of pottery, neither very fully defined, are mentioned as coming from "a gradual slope of land, with little elevation, reaching back from Jersey Creek northwest, in Wyandotte County, and on a slope equally, but slightly, elevated, reaching back northwest from a branch of McGee Creek, in this [Jackson] County." In view of the marked activity of the next few years, it is of some interest to note West's statement that up to this time "artificial mounds have not been found in this vicinity . . ."

By the following spring, 1877, the existence of numerous mounds had become known, and Judge West had begun their examination through excavation. Interest was focused almost exclusively upon a group of mounds situated north of the Missouri River on the Platte-Clay County line, with incidental mention of others up and down stream and

on the south bank of the river (West, 1877b, pp. 15-22; Lykins, 1878, pp. 251-253). West opened five mounds in Platte County about 20 yards from the Clay County line on a ridge overlooking Line Creek to the west and the Missouri to the south. A detailed consideration of these mounds will be deferred for the present, but it may be noted that two kinds were recognized, viz, those made entirely of earth and others containing a structure of stone over which soil had been heaped. There were no artifacts but "within a distance varying from one-half mile to a mile from them, large quantities of flint arrows and spear heads, stone axes, knives, flint cores and chippings, flat stones used for grinding corn, fragments of pottery, etc. are found." West was inclined to view the stone enclosures within the mounds as habitations; and on the basis of geological deductions no longer tenable, he attributed them to a people residing on the shores of a lake that had dried up 8,000 years ago.

During the succeeding summer, Prof. G. C. Broadhead, one time State geologist of Missouri, with a party comprising members of the Kansas City Academy of Science and of the Kansas Academy of Science, opened several additional tumuli in the same group (Broadhead, 1880, pp. 352-354). Four contained stone enclosures; a fifth, the only one to yield artifacts, was composed wholly of earth.

Peabody Museum of Harvard University entered the local field briefly in 1879, when Edwin Curtiss explored one earth mound and three stone chambers "in the eastern part of Clay County" (Putnam, 1880, pp. 717-718.) A small collection of artifacts, described elsewhere in the present report, was sent to the Peabody Museum; they are among the very few specimens extant from this early period of mound exploration in the Kansas City district. Unfortunately, some uncertainty exists as to the exact location of Curtiss's excavations, but there is reason to suspect that he may have worked near Line Creek rather than in eastern Clay County.

Presumably spurred by the findings north of Kansas City, Judge West undertook a brief survey prior to 1880 "to determine whether our Missouri Chambered Mound Builders extended their domain westward along the Kansas River valley and valleys of other important streams in Kansas" (West, 1880, p. 530). The statement of his results appeared as part of a paper read before the Kansas City Academy of Science in 1875, but, as he himself stated in another paper presented in 1876, he was unaware at the latter date of the stone chamber mounds near Kansas City. Probably his 1875 paper, as published in 1880, included certain observations made subsequent to the original reading. In any event, he concluded that "the Chambered Mound Builders had no permanent abode in Kansas, or if so, have left no enduring monument as evidence of it." He did leave record, however, of a village

site "on the farm of Mr. Geiesa, near a small creek of the same name, a few miles west of Lawrence [Kansas, where] fragments of pottery and stone implements are found very similar to those found on McGee Creek in this [Jackson] county, and on Jersey Creek, in Wyandotte County, Kansas, south of the Missouri River, and the circumstances under which they are found are very like . . ." He was of the opinion that these three sites were left by the same people, "but differing from the race whose skill in chamber building is so conspicuous in the chambered mounds in Clay and Platte counties, north of the Missouri River."

After 1880 there was a slackening of interest, if not an actual cessation of digging, until Fowke appeared on the scene in 1907. Working under auspices of the Archeological Institute of America, Fowke reopened five mounds on the Platte-Clay County line and despite the fact that all had been previously dug he was able to contribute worthwhile data as to their nature and the methods of construction (Fowke, 1910, pp. 65-73). As is now generally accepted, he showed that they were burial places; and he also ventured some observations concerning their general distribution and possible origin (1910, pp. 73, 92). Village sites in the vicinity of the stone mounds are not mentioned.

That a great deal of promiscuous digging, but no publication of results, went on after Fowke's explorations, as probably before, is evident from the thoroughness with which nearly every mound group on this part of the Missouri has been ransacked. Practically without exception the early reports allude to mounds just east of Line Creek; elsewhere in Platte, Clay, and Jackson Counties and in nearby Kansas virtually nothing remains to aid the present-day student in identifying the builders of the chambered mounds. Artifacts and measurable skeletal materials were apparently never gotten in any great quantity, and even the few reported by local tradition have been widely scattered and lost. We must regret the fact that so few tumuli here have escaped destruction so that the deductions of the pioneer archeologists cannot be subjected to a close reexamination in the light of modern studies. The origin and affiliations of the chambered mounds in the Kansas City area may never be satisfactorily determined, even though recent findings have given some promising clues as to the probable provenience and temporal position of at least a few. More than a crumb of satisfaction can be gleaned from the knowledge that the early preoccupation with mound exploration has tended to keep village sites inviolate except as they are reduced by the processes of erosion, cultivation, and construction work of various sorts. Through their systematic study, if not too long postponed, it is still possible to arrive at a reasonably satisfactory understanding of the pre-white occupants of the locality.

DESCRIPTION OF SITES AND ARTIFACTS

THE RENNER SITE

Line Creek is a small formerly perennial stream emptying into the Missouri from the north about 4 miles above the mouth of the Kansas River and an equal distance below Parkville. Heading in the rolling uplands along the Platte-Clay County boundary about 6 miles north of the river, the lower 3 miles of its course parallel this line about half a mile or slightly more to the west. Like the neighboring creeks east and west, it flows in a gradually deepening valley about half a mile wide whose lower portion is characterized by a narrow intrenched channel, a flood plain of limited extent, and relatively broad discontinuous terraces. Timber-covered bluffs overlook the valley from both sides. About 400 yards west of the junction of highways U. S. 71 and Missouri 45, the creek leaves its own valley to follow an artificial channel southward past Riverside Racetrack across the flood plain of the Missouri, which it joins in less than a mile. Probably the recent straightening and shortening of its lower course with the resultant increase in stream velocity and cutting power farther up was at least partially responsible for its deep intrenchment.

Since the course of the creek is from north to south, whereas the Missouri trends almost due east, the latter cuts squarely across the smaller valley and its bordering upland ridges. The ridges terminate in steep southward-facing bluffs about 150 feet high. Their limestone bases may be visualized as bulwarks that deflected the Missouri past the Line Creek embayment at those times in the recent past when the current flowed along the north edge of the present flood plain. Characteristically, as on most other side valleys here, a series of terraces begins as soon as the bluffs afford protection from the vagaries of the Missouri.

A scant 300 yards north of the protecting bluff line, in the middle of Line Creek Valley, is the Renner site. It occupies a well-drained convenient terrace (pls. 1, 2) with the creek to the east and south, Juntin Branch to the north, and a timbered ridge to the west. At present, Juntin Branch touches the site only at its northern tip. Until 25 or 30 years ago it skirted the base of the village terrace for nearly a hundred feet more, thence looping back toward the northeast to empty into Line Creek about as now. Its course today is due to artificial straightening of the channel through the neck of the old meander, now discernible only as a shallow swale and wet weather pond. Between the terrace (elev. ca. 764+ feet) and Line Creek, south of the former bed of Juntin Branch, is a patch of bottom land (elev. ca. 750 feet) including perhaps 6 or 7 acres. In 1937, part of this was in corn, the rest deep in native prairie grasses and pasture. Another fine terrace fronted by arable bottoms lies just north of

Juntin Branch, and still others border Line Creek thence northward. The terraces certainly, though probably not the bottoms in the vicinity of the Renner site, are well above reach of waters backed up by any conceivable flood in the nearby Missouri.⁵ Line Creek itself, draining not more than 25 square miles, could never have menaced this or other similarly situated communities along its course.

The ridges east and west of the site still bear a parklike stand of fine old hardwoods—oak, elm, locust, hickory, etc.—and we were informed by old residents that 50 years ago heavy timber covered the village terrace as well. Of this no trace now remains. It may be inferred that the valley generally, now cleared and occupied by prosperous farms, was forested when prehistoric man dwelt at the Renner site.

The village terrace has been considerably cut up by roads, pipelines, and residential activities, all of which have helped to obscure certain details besides contributing to the ultimate complete effacement of the remains. Particularly destructive was the new highway cut-off on U. S. 169, which removed a strip about 25 yards wide through the west portion of the area, incidentally providing in the walls of the cut an excellent cross section of the site. East of this road the middle of the terrace is occupied by the residence, garden, poultry yard, and outbuildings of the owners, Mr. and Mrs. Leslie Renner. About 50 yards still farther east an inconspicuous depression drains southward, giving a slightly saucerlike conformation to the terrace. This low spot appears to be almost devoid of artifacts and debris, but otherwise the entire flat and the rim of the bench have long made good surface hunting. Alfalfa, corn, and potatoes were growing over nearly the entire available portion of the flat during our stay.

By comparison with the large historic sites in this general region, the area covered by the present remains is small. It measures approximately 200 yards north to south by 150, a total area not much exceeding $5\frac{1}{2}$ or 6 acres. To the north it ends on the brink of Juntin Branch and a gravel road. The edge of the terrace, conforming approximately to the 760-foot contour (fig. 2), forms the east and south boundary. West of the highway cut, the remains are virtually encompassed by the 765-foot contour. It is improbable that the village ever extended much farther west, since an almost imperceptible swale intervenes before the foot of the hills is reached. In times of heavy rain this would become swampy as a result of run-

⁵As pointed out above, the flood of 1903 reached a height of 752.4 feet at Quindaro pumping station on the south side of the Missouri opposite the mouth of Line Creek Valley. During the great flood of June 1844, the Missouri, just below the mouth of Kansas River, had a crest 7 feet above that of 1903. The crest at the mouth of Line Creek is not known, but to inundate the Renner site water would have had to rise at least 13 feet above the 1903 stage (Climatic Summary of the United States, section 41).

off from the hillside which otherwise would head for the terrace. Such waters could drain either way, i. e., north into Juntin Branch or south into Line Creek, and in any event would be prevented from discommoding occupants of the terrace.

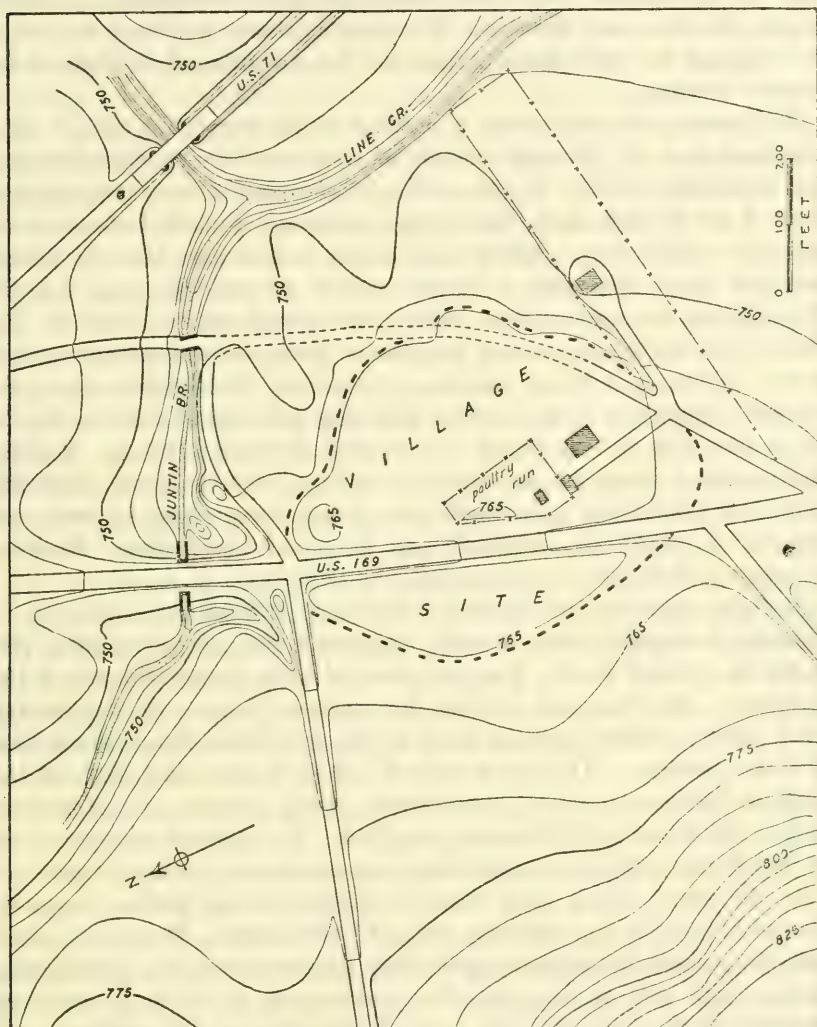


FIGURE 2.—Contour map showing Renner village site (heavy broken line) and surroundings; contour interval 5 feet.

Superficially, the site has been hunted over intermittently for a number of years but seems not to have been reported prior to our investigations in 1937. It received no mention by Fowke (1910, pp. 65-75) or his predecessors who opened a number of burial mounds on the bluffs to the east, across Line Creek, in 1907 and previously. That antiquities were plentiful underground as well as above, and

that systematic excavation on the terrace would be eminently worthwhile, apparently was not realized until the recent pipeline and highway cuts were put through. It was these activities that led J. M. Shippee, of North Kansas City, in February 1937 to notify first the Bureau of American Ethnology and subsequently, at more length, the National Museum. Fortunately, there had been no previous digging for relics here because of the enlightened attitude of its present owners.

Preliminary to excavation a careful study was made of all open cuts, new and old, through the site as well as of the surface distribution of village debris. In the walls of the main highway cut, varying from 4 to 10 feet deep, the profile included a dark humous zone 12 to 30 inches deep. Below and nearly everywhere sharply differentiated from this was a bright yellow to reddish clay subsoil. Throughout the upper layer, with a horizontal extent of nearly 200 yards, were numerous pottery fragments, flints, worked and unworked animal bones, and burnt limestone boulders. This debris was particularly abundant in and about pits dug into the subsoil to depths of as much as 6 feet below the present ground surface. Readily distinguished from the surrounding soil by their contained dark fill, these pits frequently were made even more conspicuous by beds and pockets of white ash, charcoal, and lumps of burnt clay. Nothing suggestive of house structures could be detected.

Surface examinations showed a tendency toward concentration of remains in certain spots, usually apparent also by a rise of a few inches in ground level. Two or three of these occurred west of the highway. One was just outside the northeast corner of the poultry yard, with another about 35 yards to the south and immediately east of this enclosure. This we trenched. Still farther east, beyond the shallow depression already mentioned, along the rim of the terrace, sherds and flints were likewise plentiful. The ground now occupied by the Renner residence and lawn may once have been another such rise. It seems likely that these represent former refuse heaps or less probably the approximate sites of habitations. If actually middens, they must have been appreciably higher before the ground was broken out, and it may be that cultivation is in large measure responsible for the general over-all distribution of artifacts and occupational debris on the terrace. However, we could secure no verbal or other direct evidence that would indicate the former existence of mounds of any size.

From the foregoing evidence, it was concluded that the most promising remaining portions of the site lay immediately east of the highway in the vicinity of the Renner residence and outbuildings. Permission was accordingly obtained to excavate in the poultry yard,

where no damage would be inflicted on crops. A north-south baseline 150 feet long was laid out, parallel to and 5 feet west of the east fence. The south end of the line, beginning 10 feet inside the south yard fence, was designated "0." The line was then divided into 5-foot units, consecutively numbered from the south 0, 5, 10, 15, 20. . . the numbers serving as designations for the 5-foot squares immediately west of the line. In other words, each square was labeled according to the number on the stake in its southeast corner. Units in the second row of 5-foot squares west of the base line were given similar numbers to which were added W1, W2, W3 . . . , depending on the location of their southeast corner 5, 10, 15. . . feet west of the base. To the east, the designations were similar except that E1, E2, E3 . . . were used. Thus in figure 3 pit 13 is located in square 45, pit 1 in square 145W2, and pit 15 in square 95E12. In the absence of definable archeological units, such as houses, this purely arbitrary and mechanical system once its essentials were grasped appeared as simple and satisfactory as any.

Within each 5-foot square the soil was carefully troweled out until the dark mixed deposit gave way to clean hard subsoil. Sherds, flints, animal bones for identification, and other relatively abundant remains were sacked up and labeled according to unit and depth. Since no regular stratification lines were discerned, arbitrary 9-inch layers were used in segregating such materials. That is to say, in the field catalog, sherds are listed as coming from the 0-9 inch, 9-18 inch, 18-27 inch, etc., level in a given unit. These depths began at the surface and read down. Less common objects of bone, stone, etc., restorable vessels, and special features were recorded more closely by giving exact depth underground as well as their distance and direction from two corner stakes in a specified square.

The total area thus excavated included just under 2,800 square feet. A 150-foot profile of the deposit was obtained along the baseline, after which the excavations were widened along those portions that appeared most promising. Several pits were opened, and a relatively prolific midden layer was worked at the north end of the chicken yard immediately northwest of the Great Lakes Pipeline Co. right-of-way. At the south end of the baseline trench the yield was low until square 45 was reached. Then came a 65-foot strip disclosing pits, beyond which the yield diminished again until near the north end. From here west remains were more plentiful. The abundance of pits between squares 85 and 120 led to widening of the cut, and finally to the opening of an area 20 feet wide and 60 feet long just east of and outside the chicken yard. This cut was carried through a low rise or midden already mentioned elsewhere. In depth the excavation varied from 1 foot at the south end of the

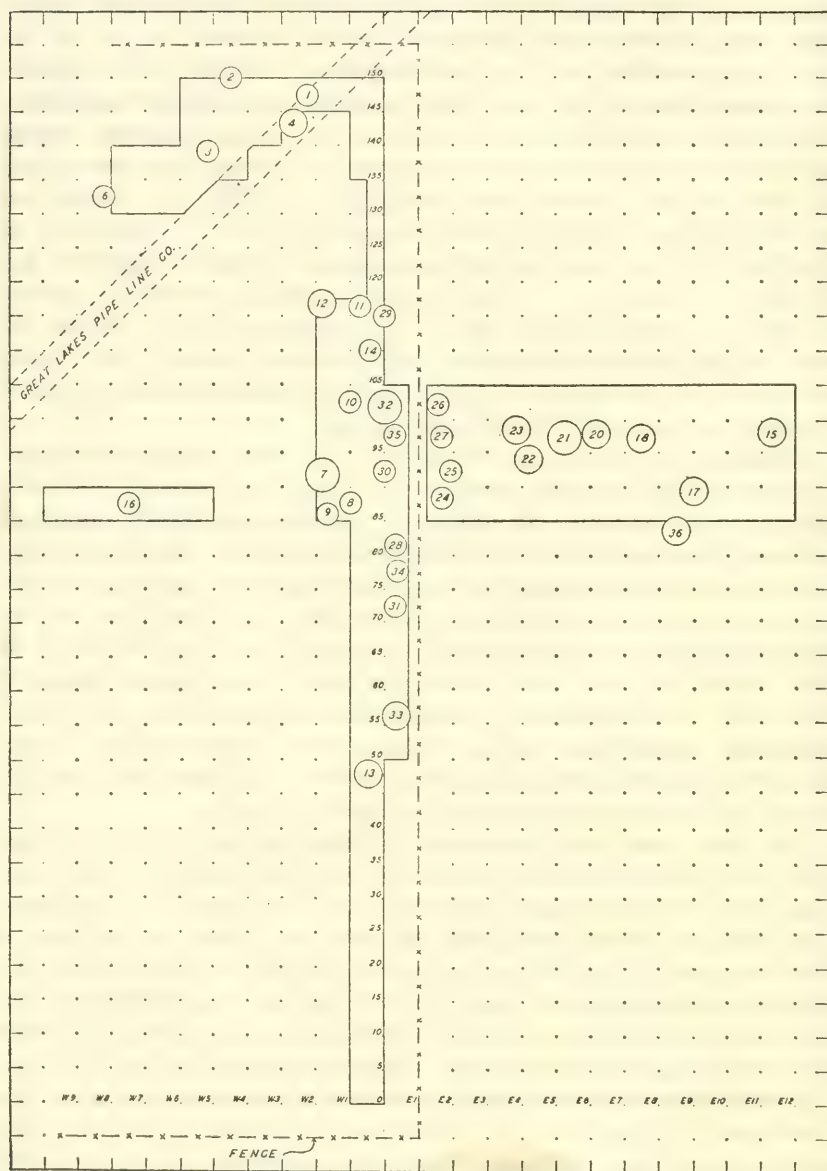


FIGURE 3.—Plan of excavations at the Renner village site, showing location of pits.

base-line trench to about 30 inches in square 110. Average depth, omitting pits, was between $1\frac{1}{2}$ and 2 feet, and the total volume of fill removed and scrutinized is estimated at between 4,500 and 5,000 cubic feet.

The baseline profile was essentially the same as the much longer one previously exposed in the highway cut. The surface of the underlying yellow subsoil was found to vary in altitude from 760.7 feet at the south end to nearly 762 feet in square 80. This elevation is maintained for some distance north and northeast, underlying most of the area where the old storage pits are notably abundant. Though slight, this rise is apparently reflected in the contour of the ground surface and may have been sufficient to improve surface drainage conditions somewhat, in consequence of which an unusual number of caches were placed along it.

Above the subsoil was a varying thickness of darker topsoil. For 65 or 70 feet from the south end of the baseline this was relatively thin, hence mostly disturbed in the past by cultivation, and the occupational remains were scanty. Beginning in square 75, thence northward and eastward, its color and content changed rapidly. The total depth increased to about 2 feet, of which some 8 inches were plow zone. Burnt rocks, animal bones, sherds, and flints occurred in profusion to a depth of about 15 inches, and less plentifully to the top of the subsoil. The actual ground surface nowhere exceeded 764 feet in elevation, this point being attained in the vicinity of the grouped refuse pits.

Despite careful attempts to locate habitational units, no post molds, hearths, floors, or other evidences of similar nature were found. From several pits were taken masses of hard baked clay, resembling old bricks in color and toughness. None showed the imprints of grass or twigs, or any other markings such as ordinarily occur in roofing or wattling clay. This uniformly negative evidence leads to the conclusion that earth-covered pit houses, such as were regularly used by many prehistoric and historic peoples of the Missouri Valley and Great Plains, were probably unknown at the Renner site. Presumably, its occupants resided in perishable pole and bark or thatch structures built on or only slightly below the ground surface. Such structures, after abandonment, would have been effectively and completely effaced, if not by natural agencies, then certainly by the plow. At one time or another the entire terrace has been under cultivation, plow sole generally having showed up in the excavations at 7 to 9 inches. No other explanation for the lack of house traces seems tenable in view of the considerable amount of excavation done first by machinery and subsequently by our party, with consistently negative results.

Cultural remains were most plentiful in and immediately about the old pits. These were undoubtedly dug originally for storage and concealment of foodstuffs. Secondarily, as when the contents soured or had been used up, the pits were filled up with refuse. When opened they yielded animal bones, sherds, burnt stones, charred vegetal material, and occasional broken or whole artifacts. Their original form and depth are difficult to determine, since the fill in their upper portions was virtually indistinguishable from the midden-filled topsoil covering the site generally. In all probability they had been dug from approximately the present surface of the ground, or what was the surface prior to leveling by modern tillage. This assumes that the old village level was essentially the same as the present surface. Their presence was usually undetected, however, until all upper soil had been removed, when the pits showed as dark refuse-filled spots contrasting sharply with the clay subsoil. Probably much of the material taken from the squares and arbitrarily labelled by depths actually was contained in the old pits. Because their upper portions were so indistinct, however, no attempt was made to assign specimens to given pits except where they were found definitely within them below the top of the subsoil.

The location, dimensions, and general contents of the various pits are summarized in table 1. Data for some are incomplete, but the others will provide a sufficiently clear idea of their usual character. The artifacts and other remains from the pits will be discussed in detail under the appropriate headings.

TABLE 1.—*Summary of dimensions and contents of pits at Renner site*

No.	Location: square	Depth		Diameter (inches)	Contents
		From ground surface	Into subsoil		
1	145W2-----	Inches 42	Inches 10	48-----	Potsherds, flints, flake knife, antler flaking tool and projectile point, animal bones.
2	145W4-----	45	15	32-----	Potsherds, flints, bones.
3	135W5-----	44	15	36×44-----	Do.
4	140W2-----	53	23	42-----	Potsherds.
5	?-----				Potsherds, worked antler.
6	130W7, 130W8-----	42	10	46-----	Potsherds, flints.
7	90W1, 90W2-----	20	10	54-----	Potsherds, flints, cut antler tine, unfinished antler projectile point.
8	85, 85W1-----	48	25	40×38-----	Potsherds, flints, bone awl, charred hickory nuts, cut antler.
9	85W1-----				Potsherds, flints, charred maize, beans, papaw seeds.
10	100, 100W1-----	38	28	38-----	Potsherds.
11	115-----	60	12	36-----	Potsherds, flints, bone awl, burnt clay lumps.
12	115W1-----	36		Top: 38; bottom: 45-----	Potsherds, flints, 2 restored pots, 2 mammiform objects, antler rubbing tool, bone awl, grooved ax fragment, hammerstone, abraders, animal bones.
13	45-----	31	13	60-----	Potsherds, flints, cut bone.
14	105, 110-----	44	22	40-----	Potsherds, flints.
15	95E12-----	40	24	Top: 41×62; bottom: 36×39-----	Potsherds, flints, flake knife, 2 bone awls, limonite.
16	85W8, 85W9-----	40	20	46×42-----	Potsherds, hammerstone, deer-bone scraper.
17	Center under stake 90E9-----	42	18	48-----	Potsherds, flake knife.
18	95E8-----	48	31	37-----	Decorated bowl fragment, 2 antler rubbing tools.

19	In roadbed U. S. Highway 169.	46 (est.)		50	Potsherds, flints.
20	95E5, 95E6	41	20	40	Potsherds, unworked fresh-water mussel shell.
21	95E6	54	26	48×72	Potsherds, flints, 3 bone awls, worked bone and antler, burnt clay lumps, unworked shell.
22	90E5	50	24	59×68	Potsherds, flints, bone awl, chipped blade, charred papaw seed, unworked shell.
23	95E5	35	13	48	Potsherds, clay bird effigy, 3 flake knives, celt butt, charred papaw seed.
24	85E2				Potsherds, flints, chipped celt, bone awl, limonite, unworked shell.
25	90E2	40	12	42	Potsherds, bone awl.
26	100E2	56	29	48	Potsherds (incl. painted fragment), chipped flints, pierced shell fragment, broken beaming tool and bone tube, hematite, hammerstone, bones of buffalofish.
27	95E2	45	16	39	Potsherds, miniature jar, clay pipestem (?) fragment, chipped flints, antler rubbing tool, abrading stone, dog bones.
28	80E1	32		42	Potsherds, hickory nut fragments.
29	110E1				Potsherds, steamed scraper, pierced bone object, antler projectile point, cut antler, chipped flints.
30	90E1				Potsherds, dog bones.
31	70E1	36	7	36	Potsherds, cut deer antler, small limestone mortar.
32	100E1	46	20	69×49	Potsherds, chipped flint, broken beaming tool, multi-perforated antler object, catfish spine.
33	55E1	29	8	42	Potsherds, chipped flint, partly restored jar.
34	75E1	44	20	Top: 40; bottom: 44	Potsherds, cut antler.
35	95E1				Potsherds.
36	80E9	34	16	48	Potsherds, chipped flints, antler projectile point, limestone cone fragment.

VEGETAL REMAINS

As is generally true of the Missouri Valley in open camp and village sites subjected to fairly heavy precipitation, traces of vegetal materials were extremely scanty. Carbonized specimens only had survived the passage of time. Of primary interest was the finding of a few charred kernels of maize and some beans, all of which crumbled and were lost before they had dried sufficiently to be treated with preservative. From pit 9, in a layer of charred grass 27 inches beneath the surface, were taken six short wide kernels of maize. Among other carbonized materials at a depth of 30 inches were identified several small beans resembling modern pintos in size and shape. There can be no doubt that they were from the aboriginal occupation of the site, since they were inclusive in undisturbed and unbroken archeological formations lying far below the levels reached by modern machine cultivation. They may be regarded as evidence that the subsistence economy at the Renner site was based in part on the practice of horticulture. For such pursuits the mellow bottoms along Line Creek, and possibly also the wide flood plain of the nearby Missouri, could have been utilized. It may be noted, however, that the familiar bison scapula hoe of the eastern plains was not found in our excavations, although the type is relatively abundant in other later (e. g., Oneota) sites along this general portion of the Missouri Valley. Shell hoes were likewise absent. Inferentially, then, agricultural methods involved the use either of wooden digging sticks or hoes of which no trace survives, or else of chipped stone blades such as are represented by certain specimens found at the site. The latter have been described in another section.

Of the wild nuts, berries, seeds, tubers, and fleshy fruits, which, locally abundant, presumably supplemented maize and beans, there were disappointingly few traces. Pits 9, 22, and 23 yielded several seeds of the papaw (*Asimina triloba*), which is here close to the western limit of its range. Part of an acorn (*Quercus* sp.) came from square 85E4, at a depth of 0-9 inches; it may or may not represent a food item. Several hickory nuts from the pits apparently represent various subspecies: One "closely resembles *Carya myristiciformis*," another is probably "*C. buckleyi* Durand var. *arkansana* Sarg.," and a third is "one of the thick-shelled hickories."⁶

FAUNAL REMAINS

Far more plentiful than the vegetal remains were the bones of animals and birds, representing a number of species probably utilized in various ways by the natives. Most came from pits, some of which

⁶ Identifications by C. V. Morton, division of plants, U. S. National Museum.

yielded nearly half a bushel of whole and broken bones. By no means all were saved, but skulls and skull fragments, mandibles, teeth, pelves, and limb bones with one or both joints intact were retained for identification. It is unlikely that the discarded material would have added other species to the present list.

Mammalian bones from the Renner site, as identified in the Division of Mammals, U. S. National Museum, include 10 species. Arranged in order of frequency, with the number of bones or fragments ascribed to each, these are as follows:

White-tailed deer, <i>Odocoileus virginianus</i> -----	355
Raccoon, <i>Procyon lotor</i> -----	43
Beaver, <i>Castor canadensis</i> -----	24
Bison, <i>Bison bison</i> -----	17
Wapiti, <i>Cervus canadensis</i> -----	14
Dog, <i>Canis familiaris</i> -----	10
Red fox, <i>Vulpes fulvus</i> -----	4
Lynx, <i>Lynx rufus</i> -----	4
Black bear, <i>Euarctos americanus</i> -----	2
Fox squirrel, <i>Sciurus ruficenter</i> -----	1
Miscellaneous unidentified fragments-----	315

As the list shows, bones of the deer were more than three times as numerous in the sample studied as were those of all other identified species combined. In point of fact, the actual proportion of deer to other bones at the site is probably even more one sided, since deer remains came out in such quantities that only a part, perhaps not over 10 or 15 percent, was kept. By contrast, all bones that might have been attributed to other animals were retained. Thus it seems probable that well over 90 percent of all osseous mammalian vestigia encountered were of this species. From this it may be inferred that deer must have been as conspicuous and abundant in the timber along this stretch of the Missouri in prehistoric days as they were when Lewis and Clark brought their boats up the river in 1804. Wapiti and bison doubtless roamed the open woods and upland prairies farther back from the streams but evidently figured much less in the native economy than did the deer. Even in early historic times, raccoon, beaver, fox, lynx, bear, and squirrel were plentiful in the immediate locality. No ready explanation for the unusual abundance of raccoon bones, nearly half of them mandible fragments, is at hand. Besides being a source of fresh meat, the species listed probably supplied hides for clothing and other articles, hair and sinew for weaving and cordage, and bones (in some instances also horn or antler) for the manufacture of implements.

Of interest is the indicated presence of the domestic dog, whose bones occurred in pits 27 and 30 and sparingly elsewhere. Two or more individuals are represented. A left lower carnassial and a metatarsal bone are from a very large animal and compare in size with similar parts in the skeleton of the wolf. Identification is con-

sequently inconclusive. If actually dog, these remains would indicate a brute fully the equal of some of the huge animals possessed by historic Siouan and other tribes of the central and northern plains, presumably developed for pack and draft purposes. Other fragments in the present series, including incomplete mandibles, pelves, etc., are not open to doubt as to identity. They are from a dog or dogs of medium or small stature, perhaps comparable to, or slightly larger than, a spitz. It is impossible to characterize the animal further. Such dogs might have been kept merely as household pets, for eating, or for hunting; or they may have been one of the varied mongrel breeds such as lurked about most historic Indian villages.

Bird remains included 20 bones of the turkey (*Meleagris gallopavo*), one from the Canada goose (*Branta canadensis*), and the femur of a red-tailed hawk (*Buteo jamaicensis*). As has been pointed out in another section, turkey bones seem to have been a favorite in awl making. There is, of course, no way of determining whether use was also made of the feathers, or whether the bird was domesticated. It should be observed that in proportion to the game birds probably available here in aboriginal days, our excavations netted remarkably little material. In view of the otherwise fair sample of bone refuse found, I am not inclined to regard our largely negative showing in this respect as a matter of chance alone. On the contrary, it might indicate that the natives had a predilection for animal flesh to the near exclusion of birds, or that the former was much more readily obtainable. Bird bones, except in the case of the larger species, are generally smaller and less resistant to breakage than are those of most of the mammals utilized.

Much rarer are the remains of fish and reptiles. From the surface and from pit 26 came, respectively, a left and a right opercle, ascribed to the buffalofish (*Ictiobus* sp.), and from pit 32 was taken the spine of a catfish. A number of fish vertebrae are unidentified as to species. A few fragments of turtle shell, unworked, apparently represent two genera: *Amyda*, a soft-shelled turtle, and *Pseudemys*, a pond or land terrapin. Just what use, if other than as food, was made of these last is not indicated.

MOLLUSCAN REMAINS

Nine species of fresh-water mussels are represented by shells found in various parts of the site. Identified in the Division of Mollusks, U. S. National Museum, these include: *Amblema costata* (Rafinesque), *Anodonta grandis plana* (Lea), *Lampsilis siliquioidea* (Barnes), *Lampsilis ventricosa occidentalis* (Lea), *Leptodea fragilis* (Rafinesque), *Ligumia subrostrata* (Say), *Pleurobema coccineum* (Conrad), *Proptera alata megaptera* (Rafinesque), and *Proptera purpurata* (Lamarek).

None of these species exists in the Missouri River today, owing to the heavy burden of silt, which renders the stream wholly unfit for shellfish. If a like condition obtained in aboriginal times, as is in all likelihood true, mussels must have been taken out of the small tributary streams, such as Line Creek, which are, or formerly were, generally characterized by clear water and sandy or gravelly beds. In some of these creeks, shellfish still occur, though in greatly reduced numbers.

All the species named above were taken presumably for food purposes, but under favorable conditions they are also pearl-bearing. Because the suitable watercourses are nearly all quite small, and since at best only a relatively small fraction of mussels grow pearls, it may be questioned whether shellfish were ever numerous enough in the Line Creek district to have returned a worthwhile yield to possible aboriginal pearl-gatherers. The evidence also indicates that the use of shells for artifacts and ornaments here was almost negligible.

Several species of small land snails were also found as shells at the Renner site. Since such a situation would meet their normal habitat requirements, it is improbable that they were present because of any possible utility as food. The shells, thin and fragile, were useless for the making of artifacts, nor would they offer any inducement to pearl-hunters. In short, they are probably no index to the food or other cultural habits of the natives. The list includes the following species: *Anguispira alternata* (Say), *Helicodiscus parallelus* (Say), *Polygyra clausa* (Say), *Polygyra multilincata* (Say), *Polygyra profunda* (Say), and *Zonitoides arboreus* (Say).

POTTERY

Broken pottery, though not very abundant on the surface of the site, was found underground in practically all parts tested in our excavations. Greatest concentration was noted in and about the garbage-filled pits, with lesser quantities scattered to depths of nearly 30 inches throughout the refuse mantle of the old living surface. No complete vessels were recovered, other than two miniature jars, and restorable specimens likewise numbered only two. The description that follows is based on a series of 2,827 body fragments and 524 rimsherds, together with two restored and four partly restored vessels. It is impossible to state with certainty the number of pots represented originally by the sherd series. From the wide variation seen in the rim fragments in respect to shape, size, decoration, and other particulars, I should consider 400 different vessels a conservative estimate.

Petrographic analysis has not been attempted, and the present discussion is based chiefly on observations made with a hand lens. With

the limitations of this procedure granted, it is nevertheless evident that the pottery remains present considerable variety, but their fragmentary nature precludes a clear and complete definition of each of the wares apparently represented. It should be borne in mind, too, that while most sherds segregate themselves rather easily into one of three or four varieties, there are numerous specimens of intermediate types whose exact position is not clear. In the ensuing remarks the significant features of each of the more common or outstanding types have been noted, but there is no attempt to adhere to a rigid classification that would include every sherd.

Common to nearly all sherds, and to the vessels as well, is crushed rock or grit tempering; no examples of shell, sherd, bone, or vegetal aplastic have been identified. Microscopic examination of several typical crushed sherds reveals the fact that all contained quartz, feldspar, and mica and that in every instance these inclusions closely resembled particles of the same minerals derived from the crumbling of granite. Since a number of lumps of weathered or fire-fractured granite were found in the site, it seems reasonable to view this as one source of tempering materials. In size the inclusions range from fine (under 0.25 mm. diam.) to very coarse (over 4 mm. diam.), most falling between 1.5 and 2.5 mm. The paste is generally dark gray-brown in color, often nearly black, but in many sherds has been fired more or less completely to a red or orange-buff. Freshly broken surfaces have a granular appearance, and the breaks generally are irregular. Hardness ranges from about 2.5 (cryolite) to very nearly 5 (apatite); most of the sherds tested could be scratched by celestite (hardness 3.5). The most carefully finished sherds, which are also hardest, are generally thin, well smoothed, and finely tempered; conversely, a thick profile, coarse and abundant temper, and friability go together. These heavy coarse sherds crumble readily when wet, and unless first immersed in a liquid cement mended pieces tend to break easily and repeatedly.

The incomplete vessel shown in plate 3, *a*, illustrates one of the rarer wares from the site. It is made of dark-gray clay (hardness ca. 2.5), soft when wet, and has gravel inclusions. The latter are moderately fine in the upper portions of the jar but near the base become very coarse and abundant and show on the inner surface. The exterior is finely cord-roughened; the impressions, nearly horizontal at the rim, become increasingly oblique on the body and almost vertical just above the base. Interior surfaces are poorly smoothed and uneven, partly owing to the coarseness and to a careless manipulation of the aplastic. The rim, unthickened, flares outward; the lip is flat with partly smoothed-over cord impressions. About 18 mm. below the lip a row of bosses encircles the vessel, each unit having been punched outward from the interior with a small cylindrical

tool. Between the line of bosses and the lip are vertical impressions of a cord-wrapped stick. The vessel has a constricted neck, a body

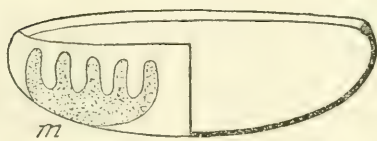
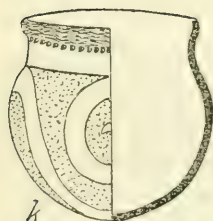
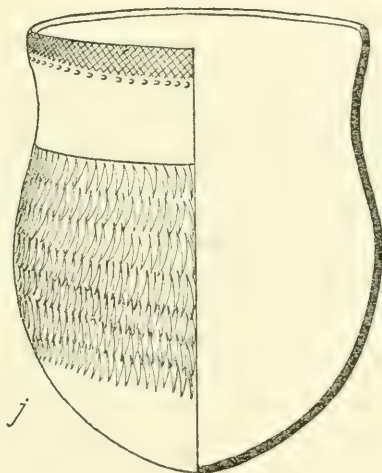
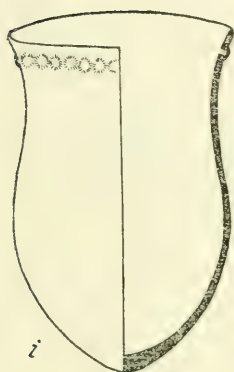
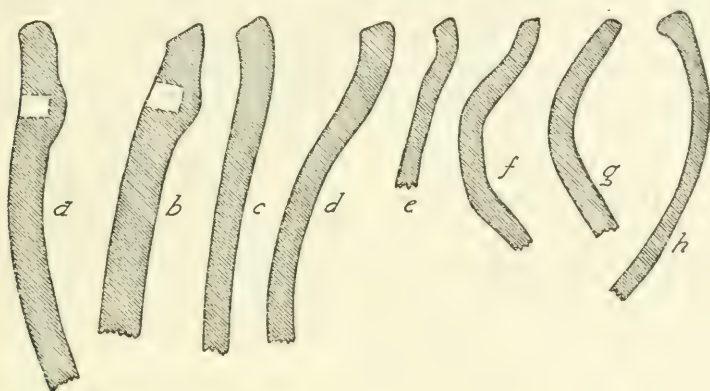


FIGURE 4.—Rim profiles and vessel shapes from Renner village site. Interior surfaces, *a-h*, toward left.

oval in vertical profile, and a polished (from use) conoidal base (see fig. 4, *i*). Walls vary in thickness from 8 mm. at the lip to 13 mm.

at the base. Maximum diameter of the body appears to have been about 22 cm., the height perhaps 33-35 cm.

All the cord-roughened rimsherds from the site, except those certainly from the above jar, show vertical impressions. Two are from vessels whose walls, instead of flaring outward at the rim, would seem to have converged in an even curve from the zone of greatest diameter. The cord-marks are generally fine and distinct.

Aside from this vessel only 22 cord-roughened body sherds were found. These are mostly gray in color, with well marked surface impressions. Several, however, are a buff-orange, are so thickly tempered with fine sand as to give a sandpaperlike surface, and have had the cord-impressions rubbed, worn, or weathered almost to the point of obliteration. I do not know with what type of rim and vessel shape these are to be associated.

Somewhat more common, judged by the number of sherds, was a slightly harder and better ware resembling the foregoing in paste and tempering, but lacking the cord-roughening. An occasional sherd shows what seem to be nearly obliterated cord impressions at the neck. There are no whole or restorable vessels, but a number of rims of varying size were collected (pl. 6, *a-c*). The exterior is generally smoothed, rarely with a slipped or slip-like surface. More often the surfaces have a gritty feel and sand particles are visible. Punched bosses commonly occur on the exterior surface 20 to 25 mm. below the lip, with vertical stroked (i. e., shallow incised) or stamped units between lip and bosses (Wedel, 1938, pl. 3, F). The neck area below the bosses is usually plain, though one specimen has vertical dentate stamp impressions. The rims seem to have been straight or slightly flaring, but with a tendency to curve inward at the top (fig. 4, *a, b, c*). They are usually fairly heavy (ca. 8-14 mm. thick), and in many cases the curvature along the lip is so slight as to suggest that they were once affixed to large vessels. My guess, which is without any direct support whatsoever, is that the jars were amphora-shaped, ovoid in vertical cross section, perhaps with more or less conoidal bases.

Much more abundant than either of the preceding, and probably quite characteristic of the site, are sherds from vessels such as that illustrated in pl. 4, *a*. There are no complete or restored pots in our series, but the general shape, approximate size, and appearance can be inferred from the evidence at hand. The partially restored specimen figured, uncovered in a pit during road grading, is owned by Mr. Shippee. It stands 43 cm. high, with a maximum body diameter of 34 cm. The neck is plain; the body, ovoid in vertical section, is covered with bands of edentate rocker impressions separated from the neck by a single incised line. Large sherds found by us, evidently from similar vessels, show the type of rim and rim decoration asso-

ciated with this body (pls. 3, *b*, 5). Characteristic is a flat lip, usually sloping inward; a slightly bulging rim with a shallow groove or channel on the inside (fig. 4, *d-f*) and cross-hatched incisions or edentate rocker marks on the outside, bordered on the lower margin by circular, elliptical, hemiconical, or annular punch marks; a plain, usually smoothed and sometimes semipolished neck, 4 to 13 cm. wide, delimited at the bottom by a single incised line; and a body covered with closely set bands of vertical edentate rocker impressions. Many of these jars were of large size. That from which came the sherd shown in pl. 3, *b*, which includes about half the rim, had an exterior diameter at the mouth of about 29-30 cm., and the maximum body diameter is estimated at 32 to 35 cm. The shape of the body and base is unknown, but if similar to Mr. Shippee's specimen, as is not improbable, the original height may have been over 40 cm. There are sherds from several others that must have approached these dimensions, though smaller ones were probably much more common. These were presumably intended for culinary use, since, like those of preceding types, the sherds often have a coating of charred organic matter on their inner surfaces.

Sherds in this group vary with regard to technological details. In the matter of paste, a dark gray color predominates, but often the surfaces have been fired to a lighter brown, buff, or reddish color, the latter hue sometimes extending entirely through the sherds. The clay seems to be somewhat more compact than in the cord-roughened pieces, but in the larger vessel fragments especially it shows a like tendency to crumble when wet. Inclusions of quartz, feldspar, and perhaps other substances are a little finer in texture and less abundant, again with possible exception of the sherds from very large pots. Surfaces, though not uncommonly checked or crackled, are a little more carefully finished. Most of these sherds, moreover, are thinner, averaging less than 8 mm. in thickness.

Only one other vessel shape definitely attributable to this ware is evidenced by our collections, and this is probably only a variant of the form already indicated. In one specimen, which unfortunately lacks the base and much of the body, the remaining pieces of rim and upperbody indicate a large jar with contracting mouth. The lip is rounded, and rocker markings begin on the exterior immediately below the lip. Such a jar may be visualized if one imagines that a vessel of the type described immediately above were cut off along the incised line which normally separates the plain neck zone from the decorated body.

The finest pottery type, illustrated by the small jar in pl. 8, *a*, and figure 4, *k*, shares many of the characteristics of the preceding, especially in regard to decorative techniques and motifs. The specimen in question is thin-walled and much harder (ca. 5) than the

average, made of gray paste with occasional darker firing clouds. Inclusions consist of small white angular siliceous particles rather sparingly used. Surfaces are somewhat uneven, but definitely polished. The rim is narrow and interiorly channeled and terminates in an undecorated inward-beveled lip; it bears horizontal rocker impressions below which is a row of hemiconical punctates. Below the plain polished neck, and separated from it by an irregular incised line, the body is ornamented with curvilinear scroll designs worked out in rocker-roughened bands on a plain background. The designs are not very well arranged, and the work as a whole suggests an inept artist. Four units are present, but one is much smaller than the others and appears to have been crowded in. No two units are alike (fig. 5). The smallest, which runs only about halfway down the vessel, is supplemented below by a horizontal crescentic unit, also rocker roughened. Carelessly incised lines delimit the roughened areas. The body is globular, and in profile presents an even curve from side to side below the neck.

Relatively few sherds in our series are comparable in hardness, finish, and decoration to the above vessel, but some of the smaller cross-hatched rimsherds are from vessels that must have resembled it more closely than they did the larger culinary jars. Whether they represent a specialized type, as for example mortuary ware, or were only the product of more care and greater skill on the part of some potters I cannot say. At the moment I see no reason for regarding them as importations, or as necessarily beyond the technical ability of members of the local group.

The specimen in plate 8, *d*, somewhat inaccurately restored from a sherd, is a softer piece. Its dimensions, approximate only, are: Maximum diameter, 13.5 cm.; diameter at rim, ca. 12 cm.; height, ca. 13.6 cm. Paste and surface are a light buff; tempering is fine sand. The body is globular, the neck constricted, and the rim flaring. Cross-hatched lines cover the rim, whose lower margin is marked by punctates. The body is entirely covered with rocker-marks, which fade away to a highly polished base. There is no bordering line between the decorated body and the plain neck. Technically inferior to the polished ware just noted, this piece differs still more widely from the other types so far discussed.

To the vessel shapes already described may be added two others—square or lobed jars, and bowls. The first is shown by the sherd in plate 8, *b*. Dark gray in color, thin-walled, and moderately hard, but lacking polished surfaces, this jar originally was squarish in outline with rounding corners. Each of these corners or lobes was covered with finely executed rocker roughening bordered by a broad shallow groove. The flat sides between the roughened lobes are plain and smoothed. The rim is narrow and cross-hatched; the neck, 3.5

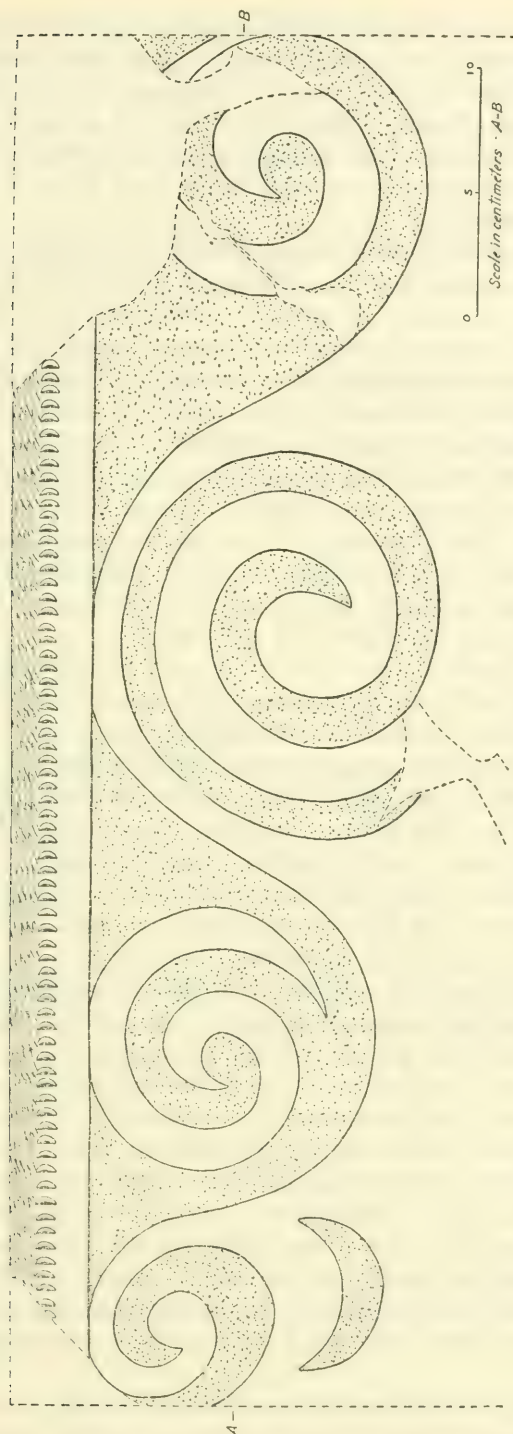


FIGURE 5.—Alternate-area design from pottery vessel (U. S. N. M. No. 380867), Renner village site. Stippling indicates rocker-roughening; see also pl. 8, a.

cm. wide, is smoothed and is bordered above and below by a row of punctates. Another sherd, slightly larger than that shown, is undoubtedly from the same jar, so that three, or possibly all four, lobes are partially present. This must have been a fairly large jar, though smaller than the ovoid culinary utensils represented by plate 4, *a*, but the exact dimensions as well as the form of underbody and base are conjectural.

Similar to the above, but from smaller and cruder vessels, are two sherds showing a plain neck and parts of two "lobes" or rounded corners. In each the lobe is set off by a crude incised line, but neither the bulge nor the intervening flat areas are ornamented. One includes part of a narrow rocker-marked rim with nearly obliterated punctates immediately below. Still another sherd (pl. 7, *j*) lacks the rim, though including a bit of the plain neck. Definitely evidenced is the beginning of a lobe, bordered by an incised line. Below this line, on the lobe, is rocker roughening, the rocker having been held parallel to the bordering lines. The roughened zone varies in width from 12 to 20 mm., and was evidently curved or circular. Below is a smoothed area which bears a dull-red coating with a rusty appearance when rubbed. This piece is thin, hard, and well made.

Bowls are indicated by one partly restored specimen and several fragments. The partly restored piece (pl. 8, *c*; also Wedel, 1938, pl. 6, A) includes about a third of the original vessel with a 22-cm. section of the rim. This arc, projected, would indicate a maximum body diameter of 28-30 cm. The bowl was circular, compressed vertically, with the rim turning inward (fig. 4, *m*). The lip is rounded, slopes inward slightly, and is noticeably thicker than the vessel wall (fig. 4, *h*). The latter averages about 4 mm. in thickness. The exterior surface and lip are well smoothed, the interior less so. Color varies from light gray with black firing clouds on the interior to a variable dark reddish exterior. On the outside of the piece is a design, perhaps a conventionalized hand, outlined by a wide shallow groove within which is a rocker-roughened area. Part of another similarly roughened area remains at each end of the sherd, suggesting that originally there may have been four such units. There are traces of red paint on and between the roughened areas but not on the bowl interior. Two other small rimsherds, undecorated and with flat lips, have a curvature almost identical with the sides of the above bowl fragment, and probably are from vessels of the same general size and shape. Other fragments, two in number, are of soft fine yellow clay, with no visible tempering, and very roughly shaped into a small rude bowl. This vessel looks like a beginner's or very inept potter's work.

The noteworthy features and provenience of the 524 rimsherds are presented in summary form in table 2, and most of the common types

have been illustrated in this or the preliminary report, as indicated. A few explanatory remarks may be in order. Cord-roughened rims, assigned to class I in the table, probably affiliate with the first type of ware discussed in this section. Under class II, the first 5 groups, including all rims with punched bosses as well as those lacking bosses but having dentate stamp or cord-wrapped stick impressions, belong to the second ware described above. The remaining specimens, except as noted here, may be assigned to the third and most abundant pottery type from the site; a few probably represent the finer variant, but these are rare.

As the table shows, nearly half (40 percent) of the rims bear cross-hatched incising and punctates. The incising occurs as a band 1 to 3 cm. wide, and was evidently used on vessels of all sizes and perhaps of several different shapes. The punctates vary widely, owing to the different instruments used to produce them and to the various angles at which the tool was impressed into the clay; a few look as if they had been gouged out rather than punched. Forty additional cross-hatched rims are indicated with a question mark, since they are broken so that the punctate band if present would not be shown. They probably belong with this group, in which case the proportion would rise to 48 percent.

The last group in the table includes all rims showing no decoration or other surface modification. Some are from large moderately heavy pots and in profile show a shallow concave or channelled form. Others are smaller and lighter, and show a recurving or flaring rim rising from a low constricted neck (fig. 4, *g*). Some of the smallest possibly do not show a complete rim exterior, hence may be incorrectly classed with this group. As a whole, they are not made with especial care, and may come from pots of humble function. Unfortunately, there is no clue to the shapes and general appearance of the original vessels from which they were broken. The plainness of the recurved rims, together with their profile, suggests certain Mississippian forms (see p. 76) rather than Hopewellian or Woodland.

TABLE 2.—*Analysis of rimsherds from Renner site*

Description	Surface	0-9 inches	9-18 inches	18-27 inches	Pits	Subsurface; prov.?	No. spec.	Illustrated
I. Surface of sherd cord-roughened, usually with vertical impressions.								
A. Rim straight or flaring, not thickened.								
1. Lip flattened, with or without partly obliterated cord-roughening.								
a. Bosses on rim exterior, ca. 2-3 cm. below lip, with corresponding punched holes on vessel interior.								
(1) With cord-wrapped stick impressions between lip and bosses			1				1	Wedel, 1933, pl. 3, G.
(2) Without added decoration between lip and bosses				1	1		2	
b. Bosses absent.								
(1) Cord-wrapped stick impressions on inside of rim					1		1	
2. Lip rounded and/or sharpish, plain.								
a. Bosses absent.								
(1) Vertical punctates just below exterior edge of lip			1				1	
(2) No punctates or other decoration				1			1	
II. Surface of sherd not cord-roughened, generally more or less smoothed.								
A. Rim slightly flaring (rarely straight), sometimes tending to curve inward at top; thickened very slightly or not at all.								
1. Lip usually flat (rarely rounding), characteristically with an inward bevel, and plain.								
a. Stamped units or stroked parallel lines on rim exterior.								
(1) With exterior bosses on lower border of decorated zone.								
(a) Stroked (incised) diagonal or vertical lines		1	2	2	7		12	
(b) Dentate stamp impressions	1	1	3	1	2		8	Wedel, 1933, pl. 3, H, I
(c) Cord-wrapped stick impressions			5	2	1		8	Wedel, 1933, pl. 3, F

	1	1	1	1	3	Wedel, 1938, pl. 5, A
(2) Bosses absent.						
(a) Vertical or diagonal dentate stamp impressions, bordered by punctates.						
(b) Vertical or diagonal cord-wrapped stick impressions, with 1, 2, 3, or no rows of punctates.						
(c) Vertical strokes, with 2 rows of punctates.						
(d) Edentate rocker impressions (usually horizontal) and punctates.						
b. Incised decoration on rim exterior.						
(1) Cross-hatched	1	1	1	1	1	Wedel, 1938, pl. 3, A, B, D; herein pls. 3, b, 4, 5.
(2) Cross-hatched and row of punctates	12	19	3	1	33	
(Cross-hatched and row of punctates?)						
(3) Cross-hatched and 2 rows of punctates	6	3	15	8	5	
(4) Cross-hatched, annular punctates			1		211	
(5) Cross-hatched with single incised border line			2		40	
2. Lip variable, often rounding or sharpish; occasionally flat, with inward or outward bevel.					4	
a. Stamped or stroked decoration on rim exterior.					2	
(1) Edentate rocker impressions, usually faint			3	2	13	
(2) Stroked diagonals			7			
(3) Stroked diagonals with punctates			6			
b. Incised decoration on rim exterior.						
(1) Cross-hatched with incised border line and punctates.			2		7	Pl. 6, d.
c. Punctate decoration on rim exterior.					10	
(1) Single row of punctates ca. 2-4 cm. below lip	2	2	13	4	8	
(2) Multiple (3) rows of punctates					6	Pl. 6, e.
d. Rim exterior undecorated.						
(1) Lip finely notched or more broadly scalloped	4		9	2	27	Pl. 7, d.
(2) Lip undecorated	12	7	50	8	1	
Totals	39	39	240	68	32	Pl. 7, a, c.

The 2,827 unattached body sherds show several methods of surface treatment (table 3). As among the rimsherds and partly restored vessels, cord-roughening is decidedly uncommon; only 22 such fragments (0.77 percent) are present. I think it can be safely assumed that they are from vessels whose entire surfaces had been worked over with a cord-wrapped paddle; plain smoothed areas, if they existed, must have been limited to the basal portions, as an incidental result of wear and use. By contrast, plain sherds totalled 1,769 (62+ percent). That plain ware existed is evidenced by such sherds as plate 7, *e*, which shows no ornamentation whatever on either rim or body. At the same time it should not be assumed that upwards of 60 percent of all ware produced was necessarily undecorated. All restored and partly restored pots with decoration, as well as the larger sherds, show that certain areas (e. g., the neck) were often, probably characteristically, left plain. In other words, an unknown but probably considerable proportion of sherds tabulated as plain are from pots that had incised or otherwise embellished rims and/or bodies.

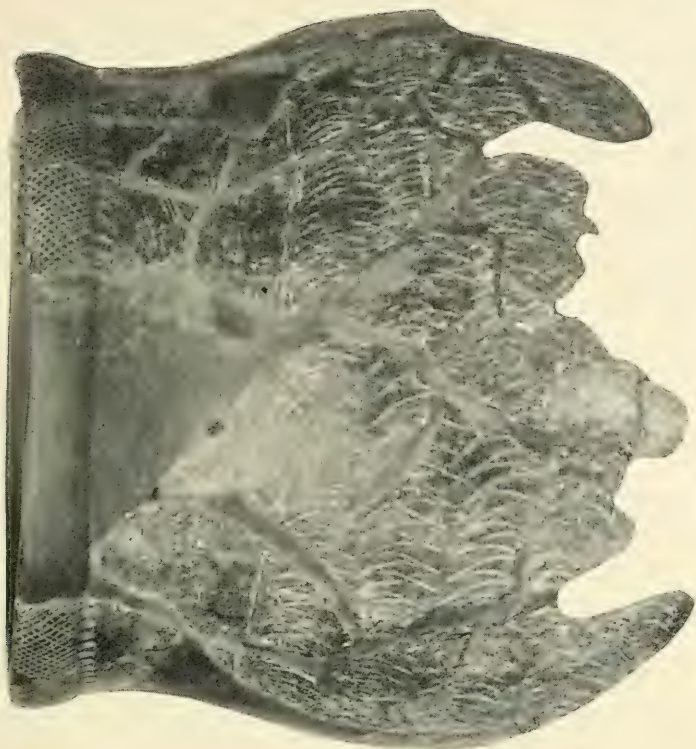
Rocker-marking, either alone or in combination with plain areas, occurs on a total of 851 sherds (30 percent). Of these, 11 show the impressions to be confined to a narrow line-bordered band, the vessel in each case evidently having borne alternating rough and smooth areas. Eighty-six others are also partly plain, but have a narrow carelessly incised line separating this from the rocker-roughened portion. Most, perhaps all, of these are probably from pots treated as in plates 3, *b*, and 4, *a*, where a similar line divides the undecorated neck from the roughened body. The last group in the table, with 44 specimens, would result from a fracture following this same dividing line between neck and body, with subsequent detachment of the lower roughened section.

The exterior surfaces of 29 sherds have been roughened in some undetermined fashion. Two seem to have been brushed with straw or grass stems; in the others the surface markings may be partly obliterated rocker impressions or something else. Most of the 66 punctate sherds are probably from the neck or upper body of vessels otherwise plain or rocker-roughened. Their distinguishing feature is a single line of punch marks, except that 2 or 3 seem to have had a wider zone filled with shallow pits (pl. 7, *g*).

Most sherds showing dentate stamp impressions have the alternate smooth and roughened zones often regarded as characteristically Hopewellian. At the Renner site this type is relatively uncommon, including but 37 pieces (pl. 7, *j-m*). Most are small, and none permits a guess as to the pattern followed. The stamp impressions are always straight and probably fairly short; bands are 1 to 2 cm. wide. An unusually well made vessel is represented by half a dozen sherds where the roughened zone, curved and as usual outlined by grooves, was

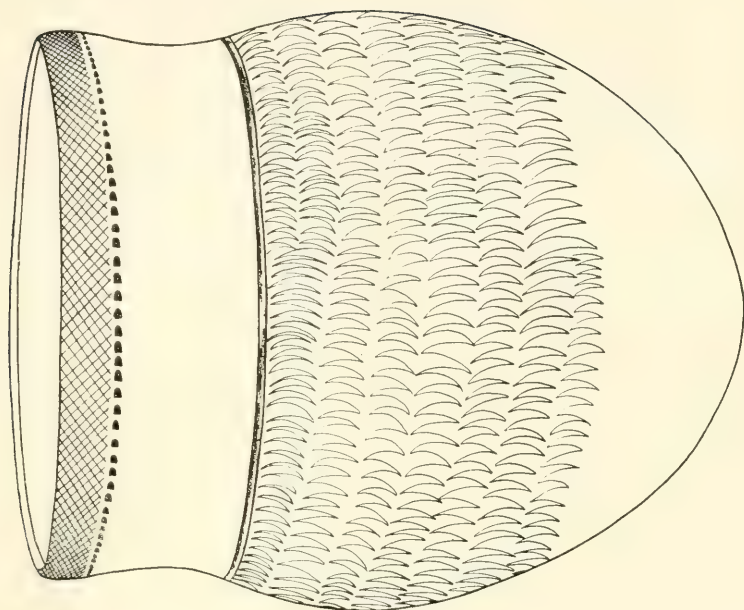


a

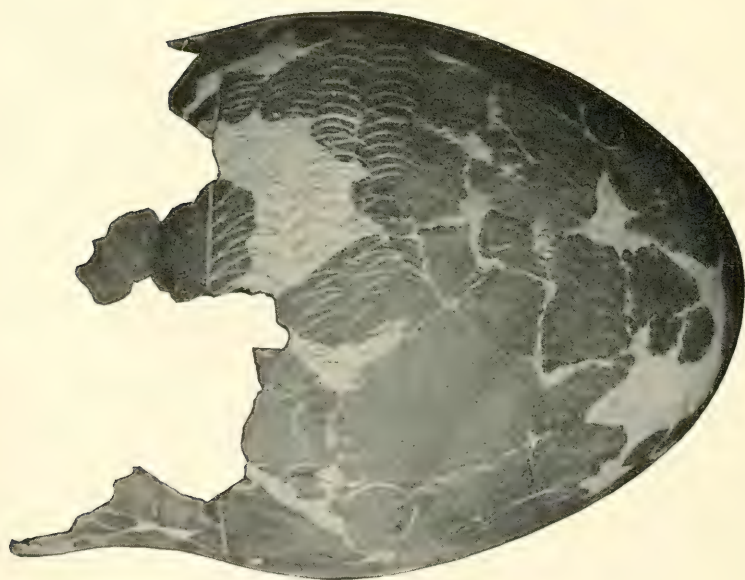


b

FRAGMENTARY POTTERY VESSELS FROM RENNER VILLAGE SITE.



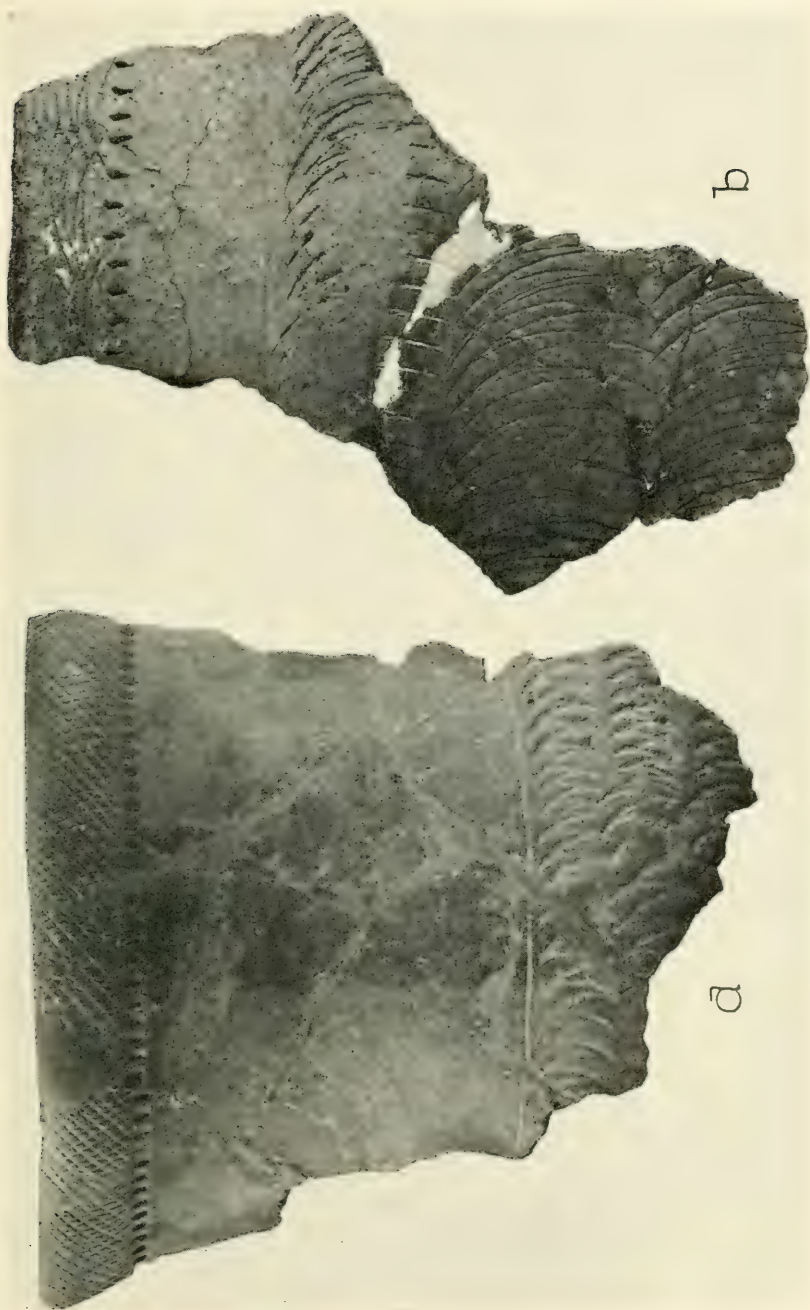
b



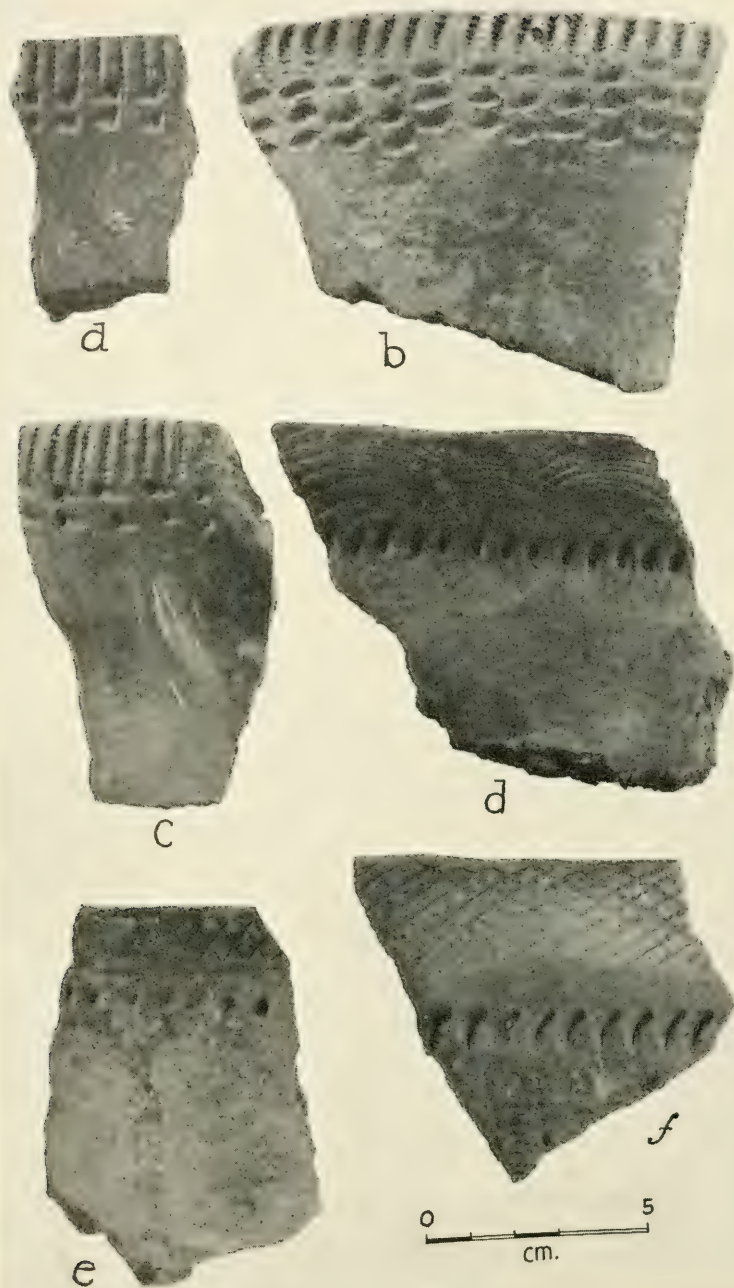
d

INCOMPLETE POTTERY VESSEL AND RESTORATION, FROM RENNER VILLAGE SITE.

Height approximately 43 cm. J. M. Shippee collection.



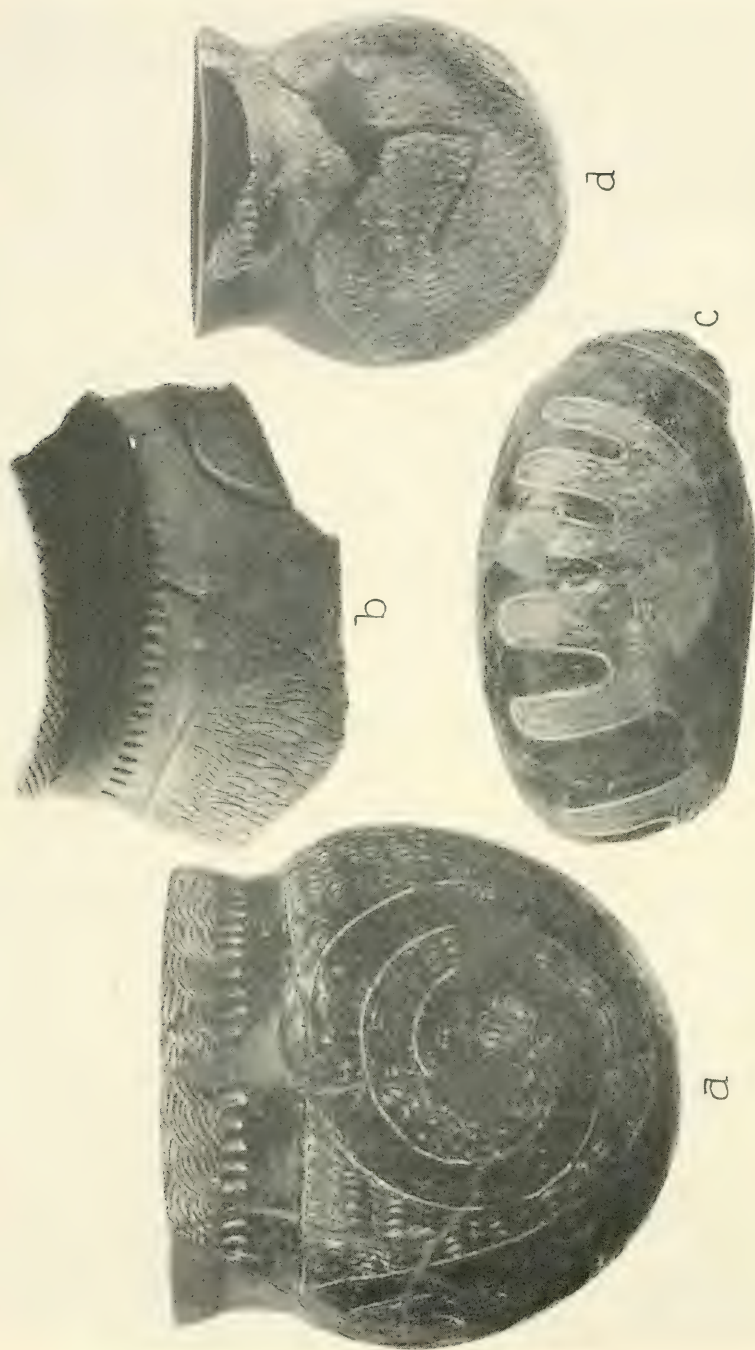
TYPICAL LARGE RIMSHERDS FROM RENNER VILLAGE SITE.



RIMSHERDS FROM RENNER VILLAGE SITE.



MISCELLANEOUS SHERDS FROM RENNER VILLAGE SITE.



POTTERY VESSELS AND FRAGMENTS FROM RENNER VILLAGE SITE.

further bordered by a row of shallow punch marks (pl. 7, *k, n*). The sherd in pl. 7, *i*, superficially resembling some of the finer cord-roughened pieces, is actually dentate stamped. The toothed stamps used to produce these impressions, like the tools which left the curved rocker marks, are unknown.⁷ Perhaps they were of wood or some other perishable material. At any rate, objects that could have been so used are entirely lacking in our collections from the site.

There is no trace of handles, lugs, tabs, or effigies on any of the sherds. Two fragments have conically drilled holes near a fractured edge, possibly to receive a thong for mending a broken vessel.

TABLE 3.—*Analysis of body sherds according to surface treatment, Renner site*

Description	0-9"	9-18"	18-27"	Pits	Depth ?	Totals
Plain, undecorated.....	120	872	228	447	102	1,769
Rocker-marked.....	42	349	88	234	41	754
Cord-roughened.....	0	7	9	5	1	22
Dentate stamp.....	1	4	1	3	0	9
Alternate smooth and rough areas:						
Rocker-roughened.....	1	7	2	1	0	11
Dentate stamp.....	2	13	8	12	2	37
Punctate.....	6	29	7	18	6	66
Brushed (?).....	0	1	0	1	0	2
Roughened; technique uncertain.....	4	12	3	8	0	27
Incised line separating plain neck (?) from rockered body.....	5	41	13	21	6	86
Plain, with incised line; probably frag- ment of preceding.....	3	20	7	11	3	44
Totals.....	184	1,355	366	761	161	2,827

There seems no good reason to doubt that all these pottery types and techniques were known and in use at the same time. Neither vertical nor areal distributions indicate any significant concentration of a particular type. Tables 2 and 3 indicate that most of the sherds came out of pits and from the 9-18 inch level, but so did the bulk of the artifacts generally. The smaller number in the 0-9 inch zone and on the surface can probably be attributed to the effects of long cultivation and repeated turning over of the soil, with a consequent destruction of sherds and the picking up of many by collectors.

During laboratory analysis preparatory to cataloging, sherds were found that, while coming from different squares, levels, or pits, fitted together or else matched so closely in all details as to be, almost certainly, from the same pots. This is expectable since the fragments of a broken vessel would often become widely scattered over a village site and its immediate vicinity. In table 4 is given a partial list of such

⁷ But see p. 100 below, under the description of the Trowbridge site.

specimens, showing field numbers, provenience, type of sherd (whether rim or body), and whether the pieces actually fit together or merely match. Usually the association is between specimens from two squares, seldom over 10 or 20 feet apart, or between a square and a nearby pit. In some cases pieces from neighboring squares came out of different levels. The fact that pieces of the same pot sometimes were found in different pits does not indicate necessarily that the two pits were open or in use at the same moment; conceivably, whereas most of a shattered vessel would be thrown out as soon as possible, a stray fragment might lie around the lodge for some time. When finally discarded, the pit that received most of the pot might be already filled in, so that the later piece or pieces would find their way into another. Most widely dispersed were the matched sherds of a well-made pot, partly illustrated by two sherds in pl. 7, *k, m*. Of the six sherds (item 19, table 4), four were from the east part of our diggings, and two from pit 19. This pit is not shown on the map of excavations, since it lay in the new roadcut about 50 yards west of our diggings and nearly 70 yards from the point where the other four sherds in question were unearthed.

Aside from the sherds and vessels described above, there was relatively little work in clay. Two complete miniature pots and a portion of a third may have been the product of a child or other unskilled craftsman, or perchance were made for some purpose other than those met by the usual larger vessels. All are roughly and ineptly modeled. One has a hemispherical body, a poorly defined shoulder, and a slightly constricted neck which rises vertically to the rounded uneven lip (pl. 11, *d*). The walls average 5 mm. in thickness, slightly more at the shoulder. About 4 mm. below the lip, on opposite sides, are two small perforations each 4 mm. in diameter. One of these can be seen in the illustration; the other has been partly obscured by breaking out of the rim above. The pot, 39 mm. in diameter, is made of dark gray flaky paste, tempered with small white opaque particles, and has no decoration. The second piece is bowl-shaped (pl. 11, *e*), with a diameter of 45 mm. A circular fracture just below the rim may suggest the former presence of a handle. The surfaces and lip are very uneven. Color varies from dirty white to light buff; the temper is uncertain, but very fine sand grains are visible. The third is a fragment from a jar shaped somewhat like that shown in plate 11, *d*, which originally may have stood about 40 mm. high. The surface, which is soft, friable, and slightly gritty to the touch, is pink to gray in color, with a gray core between inner and outer surfaces. The clay contains fine sand grains, with an occasional large angular fragment of calcareous matter visible.

TABLE 4.—*Sherd associations at Renner site*

No.	Field No.	Square	Depth, or pit No.	Sherd	Fitted	Matched	Remarks
1	228	95E2	#27	Rim	✓		
	272	90E2	#25	Rim			
2	267	115E1	9-18 in.	Rim	✓		
	47	115	18-26 in.	Neck			
3	229	100E2	#26	Body		✓	Painted and rocker roughened areas, line-bordered; lobed. Painted and rocker roughened areas, line-bordered.
	75	80	9-18 in.	Body			
4	326	100E1	#32	Rim	✓		
	183	85E9	0-9 in.	Rim			
5	326	100E1	#32	Rim (2)	✓	✓	
	243	100E1	#32	Rim			
6	115	85E12	9-18 in.	Rim		✓	
	238	90E5	#22	Rim			
	338	?	#35	Rim			
7	265	90E9	#17	Rim	✓		Probably all from same vessel.
	294	95E6	#21	Rim			
8	259	Roadcut	#19	Rim		✓	
	178	95E4	9-18 in.	Rim			
9	257	100E8	9-18 in.	Body		✓	Alternate plain and dentate stamped areas.
	307	95E5	#23	Body			
	324	80E9	#36	Body			
10	275	90E2	0-9 in.	Rim (2)	✓		
	182	100E4	9-18 in.	Rim			
11	288	90W1	#7	Rim	✓		
	323	95E6	9-18 in.	Rim			
12	1		Surface	Rim		✓	
	187	100E11	9-18 in.	Rim			
13	110	135W6	20 in.	Rim	✓		Partly restored cord-roughened jar.
	138	135W7	9-18 in.	Rim			
14	36	110	9-18 in.			✓	
	88	90	9-18 in.				
	240	105E1	18-27 in.				
15	215	115W1	#12	Pot	✓	✓?	Restored pot (pl. 8, a).
	343	?	#29	Rim			
	267	115E1	9-18 in.	Rim			
16	324	80E9	#36	Body (2)		✓	Fine dentate stamp, giving effect of fine cord-roughening (pl. 7, d).
	200	85E11	9-18 in.	Body			
17	321	100E6	9-18 in.	Rim	✓	✓	Vertical bands of short heavy horizontal rocker marks.
	242	90E7	?	Neck			
	239	90E5(?)	#19 or #22	Neck			
18	222	55E1	#33	Rim, etc.	✓		
	64	55	9-18 in.	Rim			
19	347	East dirt-piles.		Body		✓	259 and 256 illustrated (pl. 7, k, m); other four sherds almost positively from same pot, though no fits.
	259	Roadcut	#19	Body			
	259	Roadcut	#19	Body			
	256	85E9	18-27 in.	Body			
	194	90E7	18-27 in.	Body			
20	304	95E6	#21	Body			
	134	85, 85W1	#8	Rim			
21	191	90W1, 90W2	#7	Rim	✓		
	291	80E1	0-9 in.	Rim			
	265	90E9	#17	Rim	✓		

The only definite attempt to represent life forms in clay is a rather mediocre imitation of a bird (pl. 11, *g*) of unidentifiable species. The tail, if it may be so termed, is nothing more than a blunt rounding termination of the body. On one side of the head is a punch-mark, apparently made with a grass stem, to indicate the eye. The surface is cracked and fissured, but there was no attempt to mark wings or feet. The color is a uniform light buff.

Fashioned with much more care was the object illustrated in plate 11, *a*. This is of dark gray fine compact hard clay, apparently molded and fired, then ground to its present form. It is funnel-shaped, with a roundish uneven lip surrounding a well smoothed cavity 15 mm. deep. Both interior and exterior surfaces, but especially the latter, have fine scratches, such as might result from use of a sandstone grinding tool. The stem, which is solid, tapers to a diameter of 11 mm., and is ground off square at the end. In shape, the cupped end is elliptical, and it measures 45 by 38 mm.; the height is 34 mm. It was found in pit 12, along with the similarly shaped but slightly smaller limestone object, *b* in the plate, which has been described in another section.

WORK IN ANTLER AND BONE

Objects of antler and bone, showing definite evidence of human workmanship, were generally in good condition. Deer antler, both tines and shafts, was freely utilized, though not for a very great variety of implement types. From several pits came more or less complete sets of antler, perhaps laid aside by the natives and intended for later use. Some show evidences of cutting or hacking with stone tools; others appear to have been gnawed by rodents.

Quite common, relatively speaking, were curved subcylindrical sections of dressed antler such as are shown in pl. 9, *h-j*. All have been carefully worked down, so that the rough natural surface, except in an occasional small area, is absent. Striae on several suggest that sandstone abraders were used, after which surfaces were given a final polish by rubbing. The ends are rounded and usually surpass in smoothness the sides of the objects. Some were cut from the proximal end of the antler as shown by a swelling at one end where normally the "burr" occurs at the base of the horn. Rarely the diameter is uniform throughout. The series includes eight specimens, of which seven are complete. In length they range from 81 to 158 mm.; in diameter, from 20 to 32 mm., depending in part on the original size of the antler. None shows nicks or scars such as might have resulted from flint knapping, nor is any one socketed at the end. They are of a size convenient for grasping firmly in the hand; and since the most evidence of wear invariably is at one end, the most plausible view as to function would seem to be that they were rubbing tools (cf. Kidder, 1932, p. 276 and fig. 231).

Socketed conical projectile points were fashioned from antler tips or from suitable secondary tines (pl. 9, *b-f*). Nine specimens vary in length from 58 to 110 mm., with a diameter at the base of 15 to 19 mm. That most of them represent unfinished objects is suggested by their asymmetry, since they retain the perceptible curvature of the original antler. These irregularities are of minor consequence, however, and could easily have been remedied by a few strokes with a flint flake or knife, as was done on the one shown in plate 9, *c*, or by grinding. Characteristically, they have a circular cross section throughout, with a tapering basal socket 6 to 19 mm. deep, and the base has been neatly cut so as to leave a square or, less commonly, a rounded or triangular tang at one side. The tang is about 10 mm. wide and of the same length. It is clearly shown in plate 9, *c*, *d*, and there are evidences that a similar feature has been broken from *b* and *e*; *f* seems never to have had a tang.

Ten sections of rough undressed deerhorn, broken at one end, cut at the other, are believed to represent rejectage from the manufacture of such points as were described above. Some of these have been cut diagonally (pl. 9, *g*). In others, the incision encircles the antler, curving downward at the point intended for the tang. Four specimens show scars left by a square tang, and an equal number a tapered or rounding one. Particularly interesting are the pieces figured as *a* in plate 9, both from pit 7. Here the tip, about 8 cm. long, was ineptly severed from the antler shaft. The first cut encircled the antler except for a gap of about 12 mm., and a second cut was made about 10 mm. below this gap and parallel to the first. Two diagonal incisions connected the ends of the first groove with the second. But whereas the first and second reached the cancellous inner tissue, one of the diagonals did not, and when the tip was broken off a portion of the intended tang remained on the rejected portion of the antler. The two pieces, incipient projectile point and reject, fit each other perfectly. Inferentially, the technique unsuccessfully followed in this case was used on all the other points also—cutting through the tough outer plate to the soft inner tissue and then snapping off the tip.

Unworked tips, cut or broken from the antler, were also common. Some may have been intended ultimately as projectile points; others, perhaps, were due to accidental breakage or else were rejects left over in the manufacture of tools from the shaft. They vary from 80 to 150 mm. in length. A few specimens, usually the longer ones, have nicked or beveled tips, and may have been flaking tools or knappers (pl. 10, *c*).

An unusual specimen, not identified as to function, is shown in plate 10, *o*. It appears to be made of thinly scraped horn, less probably of some heavier mammal bone. Possibly less than half of the original specimen remains. One long edge and the wide end have been

thinned and rounded off. The other long edge is ragged, and apparently constitutes a fracture line running through an irregular row of ten holes. These holes, like eight others bored scatteringly about the lower half of the piece, vary in diameter from 3 to 4.5 mm. Longitudinal as well as transverse profiles of the object are curved. If the missing portion generally resembled that which remains, a curved scooplike strainer is suggested. The surfaces generally are well worn, particularly on that area occupied by the perforations.

Among objects of worked bone other than antler, awls comprise the most numerous single class. For these the metatarsus of the turkey seems to have been most frequently used. Awls certainly of mammal bone are rare. Except in one or two types, the bones have been so much altered that positive identification is impossible.

Following the scheme adopted by Kidder (1932, p. 211) at Pecos, we may classify awls recovered at the Renner site according to "the amount of work done in bringing the awls to their final shape . . ." Thus, disregarding entirely any distinction based on origin of the bones (i. e., whether mammalian or avian), we have the following subgroups:

- (a) Head of bone left intact.
- (b) Head of bone unworked except by original splitting.
- (c) Head of bone partly worked down.
- (d) Head of bone wholly or almost wholly removed.
- (e) Splinter awls.
- (f) Indeterminate and fragmentary.

Type *a* is represented by a single small specimen (pl. 10, *k*). Type *b* includes six examples, carefully made by splitting turkey metatarsals (pl. 10, *i, j*). They vary in length from 71 to 100 mm., and complete specimens usually show a considerable degree of polish. Two other awl tips, 39 and 27 mm. long, may belong to a seventh specimen of type *b*, but cannot be definitely assigned. The longest awl recovered, 153 mm., appears to be of mammal bone; the tip is missing and the head has been partly worked down (type *c*). There are 13 splinter awls (type *e*), made from variously shaped slivers and odd pieces of bone. They range from 61 to 130 mm. in length, and seldom show the wear or care in finishing that characterizes type *b*. The longest example is shown in plate 10, *g*.

The double-pointed implement illustrated in the same plate as *h*, 73 mm. long, is unique in the collections from the Renner site. Tentatively classed as a variant splinter awl, it may actually represent a fish gorge. There is no evidence of a groove or notch, nor is the shape especially well adapted to such a use. The size would be no obstacle, since river catfish and other fishes of ample dimensions to take a 3-inch gorge were and are plentiful in the Missouri River. The presence of buffalofish bones and catfish spines at the Renner site

is evidence that some use was made of fish; and other than the object in question, possible fishing devices appear to be absent from the site inventory.

From various pits came fragments of slender highly polished needles. There are several tips, usually somewhat blunt as compared with the awl tips. In cross section, the needles are flattened elliptical, and they average about 5 mm. in width (pl. 10, *l*). Since none is complete their original length, as well as the presence or absence of an eye, is uncertain.

A much larger and differently made needle is shown in plate 10, *e*. It is of mammal rib, with the convex surface showing the cancellous tissue of the interior of the bone. The upper surface is well polished and the edges are rounding and even. As illustrated, it measures 30 cm. by 1.1 cm., tapering slightly at the butt to 9 mm.; an unknown portion, including the tip, is missing. A small biconic perforation 31 mm. from the squared end shows faint traces of wear on the side nearest the butt, such as might result from a thong or cord through the hole. The entire specimen is smooth and well worn and has evidently been much used. A terminal but unperforated fragment of similar nature, also of split rib, 54 by 12 mm., from Sq. 95E6, depth 20 inches, is probably from another of these long thin needles.

Perforating tools or punches for heavy work were occasionally made from the ulna of the deer (pl. 10, *f*) or by whittling coarse points on fragments of heavy mammal bone. One complete ulna punch was recovered, and the tip of a second; both are scratched and polished from use. The complete specimen shows no indication of attempts at working down the olecranon process, which in its natural state provides an excellent handle.

Large daggers, skewers, or hair ornaments are absent in our series, but it is quite possible that they were known to the inhabitants of the village. From Sq. 95E8, depth 9-18 inches, came the well-worked distal end of a large split cannon bone, probably elk. Only a small fraction of the split shaft remains, but this too is carefully finished. It suggests an implement much larger and heavier than any of the awls described.

In plate 10, *d*, is illustrated a short heavy sewing (?) implement or bodkin from pit 29. The point is wide, flat, and thin; the butt is cut square across and is curved transversely. Nineteen mm. from the butt is a biconic perforation 3 mm. in diameter; the latter shows no worn or cord-polished grooves. The entire specimen is well smoothed but not polished, and the tip shows most marked signs of use.

Hide scrapers of bone were of two types. The usual form was the beamer or dehairing tool made from the metapodial of the deer. No whole specimens were recovered, but seven fragments clearly indicate

the type (pl. 10, *a, b*). It is evident that in each case the ends of the bone were left unaltered, while two concave scraping edges were obtained by splitting out a portion of the shaft or diaphysis from the posterior surface. In use these implements were grasped at both ends and operated after the manner of a drawshave. Long-continued service, besides imparting a high polish to the working edges, eventually wore the bone so thin that it broke and was discarded. All our specimens were fractured at or near the middle where the bone was thinnest and where, owing to the manner of use, the strain was greatest. All have well-polished and worn edges. Six retain the distal end, one the proximal. The fragments, including one each from pits 26 and 32, are from 10.1 to 16.7 cm. long.

The second type of scraper was made from the ilium of the deer. There are two of these, one from pit 16, the other found during laboratory examination of the bone refuse. Neither is complete, and their exact size or form originally are uncertain. Each has a well-worn scraping edge along the ventral surface opposite the acetabulum; fine striae suggest that the edge was first ground down with sandstone. The specimen from pit 16 (pl. 10, *p*, scraping edge turned up), which shows the greater wear, has had the original surface of the bone ground or worn away until the very minute channels within have been partially exposed, though not the cancellous tissue itself. The signs of use on these two pieces are not duplicated on the deer pelvis in the mammalogical collections of the Museum.

Nonutilitarian objects were also fashioned from bone but were much less abundant than other forms. Of particular interest are two nearly identical pieces evidently intended to represent the large canine teeth of the bear (pl. 10, *m, n*). Both were made from heavy solid mammal bone, presumably cut into shape and finished off by grinding and polishing. The larger is slightly curved transversely, and the concave surface still shows slight traces of the inner cellular bone structure. The smaller is flat and smoothed over the entire surface. They are well smoothed, especial care having been taken in finishing off the curving tip corresponding, in nature, to the exposed crown of the tooth. Each is carefully perforated for stringing or suspension; the holes are 38 mm. and 35 mm., respectively, from the upper or "root" end. There are no lines or other markings, ornamental or otherwise, on either specimen. They were found about 5 feet apart, the larger 24 inches underground in or above pit 18, the smaller 14 inches deep and just outside northeast of pit 20. Possibly they were a matched pair when in use.

From the northwest part of the diggings in Sq. 140W4, came a carefully dressed deer toe bone (pl. 11, *l*). The proximal end has been neatly trimmed off; the distal end has been ground down and deeply notched. The notch, evidently cut or sawed in with a thin flint flake,

opens into the interior cavity of the bone. The hole is large enough to take an ordinary chalkline or other moderately heavy cord. Whether the finished object was used as a dangler on a garment, as part of a necklace, or as one of the counters in the familiar cup-and-pin game is conjectural. In every respect it is identical with ethnographic pieces known to have served each of these various purposes. From pit 21 came another cervid toe bone, whittled at both ends but not pierced. A little more work would have reduced this piece to a form comparable to the above, but there is no way of determining whether the ancient workman had such an artifact in view.

Another small object of fire-blackened bone resembles the head and neck of a bird (pl. 11, *h*). A short beak and the eyes are represented. The neck has numerous short fine striae, presumably acquired during the final grinding or rubbing. The piece has been broken from a larger object but of what size or form is not determinable.

Pit 13 yielded a short bone tube, 43 mm. long and 17 mm. in diameter. The ends have been whittled in a ragged manner and were never dressed down; the interior retains bits of the porous tissue. The exterior surface is highly polished. This may be an unfinished bead. Its size and shape also suggest the familiar bone plume-holder of the historic plains tribes, though there is nothing else to indicate such a use.

In addition to the various artifact types described above, there are a number of miscellaneous fragments of worked, cut, or polished bone. These are too small or too badly broken to afford any clue to their former size, shape, or purpose.

WORK IN COPPER

That the natives who inhabited the Renner site were at least acquainted with copper is indicated by a single small worked piece, found in Sq. 85E10 at a depth of 12 inches (pl. 11, *i*). In shape it closely resembles the adz blades from the mound area of the eastern United States. From a squared narrow end the piece widens slightly to a rounding thinned edge. Near the upper end the sides are battered and turned upward, while the reverse surface is slightly convex. In cross section thus the specimen shows a slight transverse curvature. The copper, heavily oxidized, has not been analyzed; hence for the present it is impossible to do more than suggest a Great Lakes origin for the material, if not for the finished specimen itself. There is no reason to regard it as intrusive, since it was found well below the levels reached even by the deepest plowing.

WORK IN SHELL

Although the remains of fresh-water mussels were relatively plentiful throughout the Renner site, only one worked example was found.

This came from pit 23. Subrectangular in outline, it measured 32 by 20 mm. One edge is broken; the ends, and possibly one side, seem to have been cut. Near one end, on the fractured edge, is a cleanly drilled hole 3 mm. in diameter. It is possible that this represents part of an ornament or pendant, pierced for stringing.

WORK IN CHIPPED STONE

Artifacts of chipped stone were extraordinarily abundant at the Renner site, ranking second in quantity to potsherds. Projectile points, scrapers, drills, knives, and a variety of other forms were present in all parts of the diggings. Diminutive forms, involving finely retouched flakes, were rare or absent; cores or moderately large spalls were almost invariably utilized in the manufacture of artifacts.

Raw materials present a striking variety, including cherts, jaspers, and other cryptocrystalline rocks. Some are probably of local origin; others must have been obtained through trade with neighboring groups or by journeys into other districts of what is now Missouri. The sources of these materials have not been determined, but a study of this nature would appear to offer interesting information as to the contacts of the natives with their neighbors and the environment. Cherts include gray, blue-gray, white, pink, and banded varieties. There are a few pieces suggesting the aboriginally worked deposits of the Kansas Valley near Manhattan. On the whole, however, the lithic remains probably represent in large measure the utilization of some of the various chert deposits with which the limestone regions of Missouri abound.

No obsidian was found during our work at the site, though one or two chips were said to have been picked up previously.

Many whole and broken arrowpoints were recovered. By comparison with points from typical plains pottery horizons, those from the Renner site appear heavy and rough. Length varies from 50 to 80 mm., width from 26 to 40 mm., weight from 14 to 18 grams. Proportions vary, but the maximum width is usually 40 to 50 percent of total length. The surfaces of the blade have relatively coarse flake scars, and the cutting edges usually show only a moderately fine secondary retouching. In cross section, the blade is almost invariably double-convex, the greatest thickness (7-12 mm.) being along the midline. Shaping and retouching are moderately well done, but in quality of workmanship generally none of the excavated specimens approach the small delicately flaked points common at nearby sites of "Mississippi" culture affiliations or in the western bison plains.

TABLE 5.—*Classification of chipped points, Renner site*

N. NOT STEMMED:	S. STEMMED:
A. Leaf-shaped:	A. Contracting stem:
a. Pointed at both ends.	a. Shouldered only.
b. Pointed at one end.	b. Shouldered and barbed.
1. Convex base.	c. Neither shouldered nor barbed.
2. Straight base.	B. Parallel-sided stem:
3. Concave base.	a. Shouldered only.
B. Triangular:	b. Shouldered and barbed.
a. Straight base.	C. Expanding stem:
1. Two side notches.	a. Shouldered only.
2. Two side notches and one base notch.	1. Convex base.
3. Four side notches and one base notch.	2. Straight base.
4. Four side notches and no base notch.	3. Concave base.
b. Concave base:	b. Shouldered and barbed.
1. Two side notches.	1. Convex base.
2. Two side notches and one base notch.	2. Straight base.
	3. Concave base.

On the basis of form, several types are recognizable (fig. 6; table 5). Highly characteristic is a large point, with straight or curving edges, expanding stem, and straight to convex base (SCa1,SCa2). These two types, closely alike, comprised approximately 50 percent of the points found; if basal fragments and stems broken off at or just above the shoulder are included, the proportion approaches 60 percent. A representative series is illustrated in plate 12, *a-h*; the smaller forms are relatively rare. Stemmed forms also include rare specimens of SCb1 (5), SCb2 (1), SAa (1), and SAc (1). In all, approximately 75 percent of the whole and fragmentary projectile points may be classed as stemmed.

Unstemmed points are here classed as variants of the NBa type, although a number of specimens verge on NAb2 or NAb3. Characteristically they have curved edges and a straight or slightly convex base, with the maximum width 1 or 2 cm. below the base (pl. 12, *l-n*). In length, in width, and also in length-width ratio, they closely parallel the stemmed forms. By addition of notches and with other lesser retouching along the edges of the blade, any of these pieces could have been transformed into one of the typical notched points. Some exhibit retouched edges; others have only primary chipping. I am undecided, therefore, whether these types actually are finished points or, alternately, represent roughed-out blanks from an early stage of manufacture of stemmed projectiles. The latter possibility cannot be arbitrarily ruled out on present evidence.

An unusual type of which but a single specimen was recovered is illustrated in plate 12, *o*. The edges are coarsely serrate, and lack the secondary retouching found on most other points. The base is heavy and bifurcate, with a shallow secondary notch at the end of each arm of the Y. Surfaces are rough, and exhibit only primary flaking.

The serrations are relatively thin and show no evidences of wear. It is possible the piece was not intended for utilitarian function.

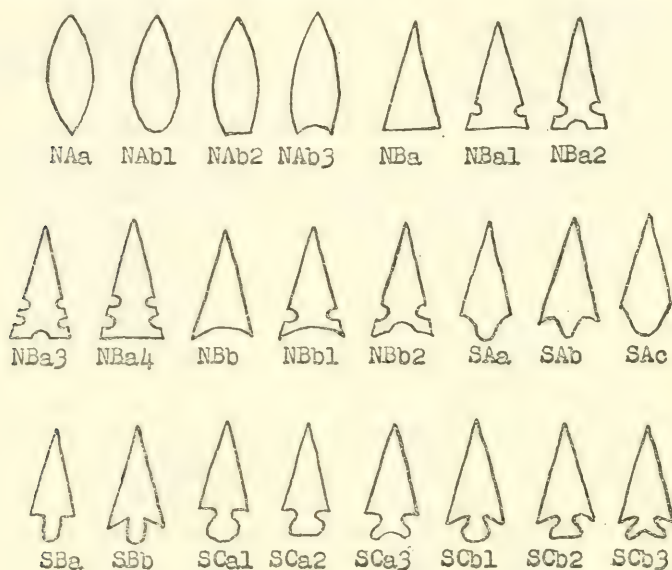


FIGURE 6.—Form classification for chipped points.

TABLE 6.—Distribution of projectile point types at the Renner and Steed-Kisker sites

Type	Renner site							Steed-Kisker site			
	Surface	0-9 inches	9-18 inches	18-27 inches	Pits	?	Total	Surface	House 1	Pits	Total
NAb1.....								1			1
Nba.....	*7	1	9	3	8	2	30		9	1	10
Nba(fgts.).....	2	2	9	6	3	1	23				
Nba1.....	*1						1		1		1
Nba2.....								7			7
Nba3.....										1	1
Nba4.....									1		1
Nbb2.....								1	1		2
Saa.....	1						1				
Sac.....					1		1				
SCa1.....	15	8	37	12	13	1	86				
SCa1(fgts.).....	3		9	5	3	1	21				
SCa2.....	5	2	10	8	2	1	28				
SCa3.....											
SCb1.....			2	2	1		5		1		1
SCb2.....			1				1				
SC(fgts.).....		1	1	2	6		10				
S(fgts.).....	6		5	1	4	1	17				
Total.....	40	14	83	39	41	7	224	9	13	2	24

*Including one small "Mississippi" type.

Scrapers were present in considerable numbers. Though varying widely in details of form and in size, all are characterized by a plane or very slightly curved undersurface, an elongate subelliptical or ovate outline, a more or less pronounced keel or dorsal ridge, and one or two abruptly retouched edges. Maximum thickness may occur at almost any point along the midline. In nearly all specimens the "snub nose" end shows most evidence of use, and often it is worn to a smooth or even polished face. A few scrapers, especially some of the smaller ones, approach the familiar "thumb-nail" or small plano-convex type of the plains, but as a whole the present series forms a much more varied group than do the scrapers from, say, the Leary site or those from the protohistoric Pawnee sites on the Loup River in Nebraska.

On the basis of size, scrapers may be divided roughly into two groups. Forty-eight specimens are small to medium, i. e., range in length from 32 to approximately 75 mm., in width from 22 to 47 mm., and in thickness from 8 to 23 mm. The maximum thickness is usually within 1 or 2 cm. of the scraping end, whence the implement tapers to a thin butt. A representative series is shown in plate 13, *j-s*. Large scrapers, 36 in number, are shaped and finished with less care and uniformity (pl. 13, *a-j*). Some are long, thick, and comparatively narrow; others are short and massive; a few are nearly circular (pl. 13, *e*). Occasional specimens have two working ends, not always in the same plane (pl. 13, *c*). Broken specimens are comparatively common, suggesting that these implements may have been designed for heavy duty. They vary in length from 75 to 103 mm., in width from 37 to 68 mm., and in thickness from 16 (rarely) or 20 to 30 mm.

Much rarer than the foregoing are stemmed scrapers, of which 7 whole and broken examples occur. Typical specimens are shown in plate 14, *l-n*. All have a wide heavy stem with convex base. The cross section at the stem is double convex or lens-shaped, but the working end is generally planoconvex and curved. The blunt end in one or two cases shows the same sort of polish from use as do the end scrapers described above. It is possible that broken projectile points were occasionally "dubbed off" thus and secondarily used as scrapers, but the planoconvex working edge is not such as would ordinarily be produced from an arrowpoint. That they were intended for use in stunning game is also possible, but such a function would not have required a planoconvex edge. Mounted on handles of wood or bone, they would have been highly serviceable in working down hides—certainly as effective and convenient as the more abundant type of end scraper.

Stone drill points are of several types, but the rarity of whole specimens makes it difficult to appraise the relative importance of each. Commonest are straight-shafted specimens 40 to 94 mm. long, rounded

at the base and pointed at the opposite end. The cross section varies from thin lenticular to thick diamond-shaped; chipping is relatively coarse. The tip in most cases shows a gloss derived from use. With minor variants, the type is shown in plate 14, *f*, *h*. There is a single specimen with blunt point in which a short straight shaft expands to a wide base (pl. 14, *i*). A thick lozenge-shaped drillpoint, 73 mm. long, has one end rounded, the other tapered and broken off. Two other specimens appear to have been made by retouching arrow-points. Both are stemmed. In one the sides curve out slightly from the shoulders and then converge to a fracture where a narrow tip of unknown length has been broken off (pl. 14, *j*). In the second, the sides converge unevenly to a broad relatively heavy tip, blunted by use (pl. 14, *k*). Whether these represent standard types for the site or are merely readapted projectile point fragments I do not know. The type of drill in which these several points were used by the natives is conjectural.

An interesting group of chipped objects is found in the disks and cones, representative examples of which are shown in plate 15. There are 24 of these, including most of the pink, gray, and brown cherts which abound on the site. In general they are characterized by a sub-circular to slightly elongate-rounded outline; one surface is plane or nearly so, while the other is rather markedly convex, ridged, or pointed (subconical). Sixteen have the bottoms (i. e., plane surface) nearly or quite flat representing the cleavage plane; in the remainder this surface has been chipped. In cross section, however, all are asymmetrical when viewed in the plane of greatest diameter. The smallest (pl. 15, *a*) is 37 mm. in diameter and 11 mm. thick, whence they range upward in size to a maximum diameter of 63 mm. and a maximum thickness of 37 mm. (pl. 15, *d*). Some of the thicker conical specimens have long narrow flake scars extending from the apex to the edge on about half the upper surface, but others show no such careful control of the primary flaking. A few of these objects might have been used as scrapers (e. g., *b*, *e* in pl. 15). As a rule, however, the edges do not show the effects of such service, as do the scrapers described elsewhere. I do not know whether all are finished artifacts, or whether some are possibly reject cores from the manufacture of flake knives. From their relative abundance and the fact that they seem to have been shaped with some care, I prefer to regard them as specialized artifacts whose function is at present uncertain. So far as I am aware they have not been reported, or at any rate described as a class, from other sites on the Missouri or in the eastern plains.

Flake knives to the number of 36 were recovered. Complete specimens vary from about 40 to 80 mm. in length; the width rarely exceeds 25 mm. (pl. 14, *a-c*). One surface invariably consists of the smooth, slightly curving cleavage plane; the other has 2 to 5 long narrow flake

scars following the long axis. A few have very finely retouched edges. This retouching is occasionally so fine that in casual scrutiny of the pieces this feature may be overlooked. The majority lack such secondary work. All these specimens would have made very effective cutting implements, since they are usually made from the most readily worked grades of chert and have, or must once have had, fairly sharp edges. Some of the smallest are but little larger than chips such as might have been struck off in the manufacture of large blades or other chipped products, and might represent rejectage. However, these specimens are considerably larger than any of the other flakes found in caches. The larger specimens, as well as those with retouched or worn edges, are in all probability knives. It is possible that all were so used, since the entire group tends to be set apart from all other flakes, spalls, etc., from the site.

Perhaps the finest example of flint working from the Renner site is the large blade shown in plate 16, *a*. It measures 26.7 cm. long, 8.4 cm. wide, and 1.6 cm. thick. The material, otherwise comparatively scarce at the site, is brown jasper, mottled with darker, almost chocolate-colored areas. Both surfaces are characterized by primary chipping only, with a low ridge left along the medial axis. The edge, slightly irregular on one side, shows fine secondary flaking. The wider end is slightly polished and the flake scars show more evidence of wear than does the opposite extremity. Such a polish might result from use in a soft yielding material, as loose earth. None of the edges are battered or nicked and, except at the wider end, are not worn or blunted. There is no indication that the piece was ever provided with a haft. Its function is problematical. The care that went into its shaping suggests a possible ceremonial use. On the other hand, it is heavy enough to have served as a spade, hoe, or similar implement for working the soil, or, what seems less likely, as a cutting tool.

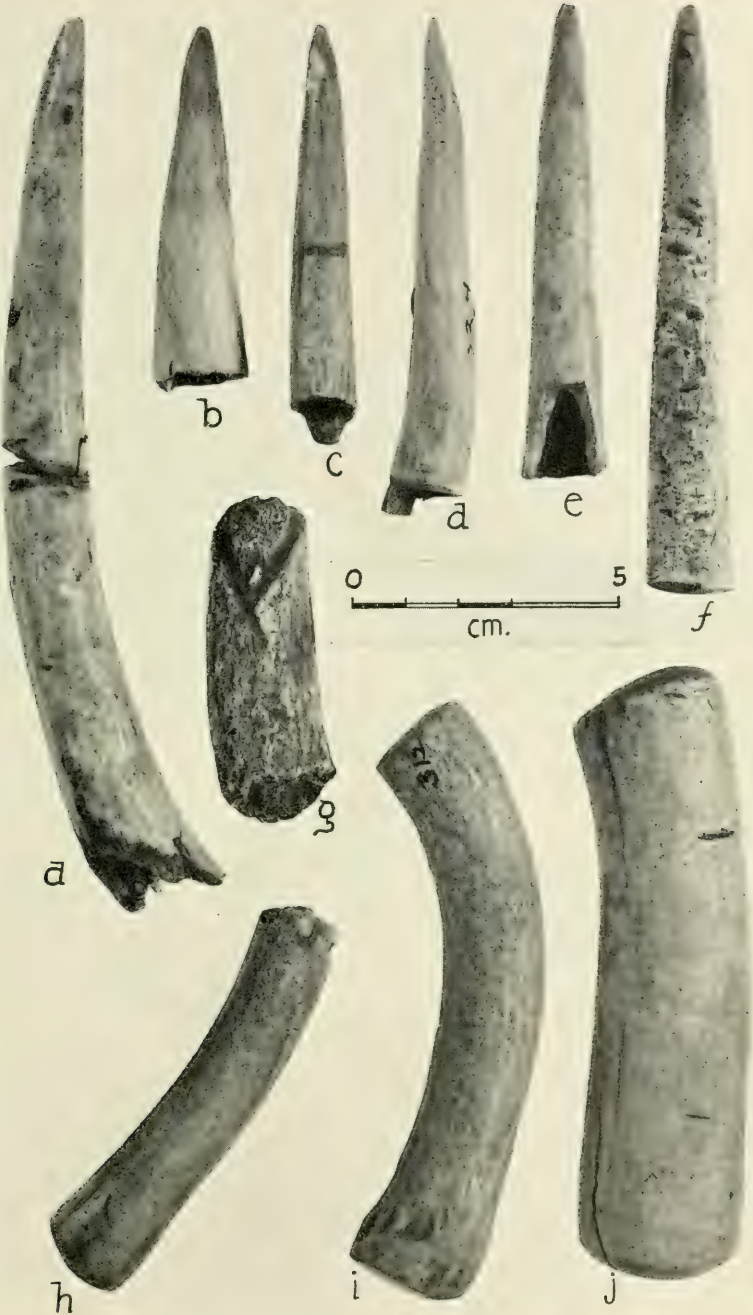
The upper right hand specimen in plate 16 was found in pit 13. It is 122 mm. long by 55 mm. in greatest width, the latter lying near one end and just above a curved cutting edge. The sides are straight, tapering evenly to a narrow squared butt. Secondary chipping occurs along the edges. The curved end, as well as portions of the broader surface, is highly polished, though not sufficiently worn to have obliterated the flake scars. Better made is a spudlike artifact from pit 22, shown in plate 16, *c*. This is 123 mm. long, with a maximum width of 62 mm. It is made of a grayish-white chert finely speckled with red and clouded with pink. The retouched edges at the rounded butt and on the sides have been rubbed, worn, or ground down, whereas the wide curved blade still retains a sharp slightly polished cutting edge. Perhaps this specimen was originally hafted but in what manner cannot be determined. Like the preceding, it could have been used in skinning or skin-dressing. When speculating on the

possible uses of archeological specimens of this nature, it is well to bear in mind that at the Renner site no recognizable agricultural or digging tools of bone, horn, or shell were recovered. At the same time, the finding of charred corn suggests a measure of reliance on cultivated plants and implies some familiarity with a hoe or spade. Likewise, the numerous old cache pits must have been dug with the aid of something more substantial than the bare hands. The three artifacts just described, especially if attached to handles, would have fulfilled all requirements for soil-turning implements.

Of somewhat different character is the blade shown in plate 17, *e*. This is of mottled gray chert and measures 124 by 60 mm. The flaking as well as retouching of the edges is generally quite well done. There is little or no evidence of wear. A cache blade or blank is suggested, or perhaps a little-used knife.

Chisel-like forms included four specimens (pl. 17, *a-d*). The largest, *a*, from pit 12, is 141 mm. long. It has a very dark gray surface color, which is almost black at the larger end. Accidental removal of several small flakes along this edge shows that the black is superficial, the true color of the material being a light pink. The piece is very coarsely chipped, with a thick double-convex cross section. The upper and narrower end is broken but discolored like the surface generally. The other three specimens illustrated, *b*, *c*, *d*, vary in details, but all have one end flaked off to a more or less squared wedgelike form. They are rudely chipped but are heavy enough to have withstood considerable rough usage. Of the group, only *a* shows any degree of polish; none has the battered bit one might expect if they had been used in a fashion similar to a modern chisel. Still, if used against such substances as wood, perhaps breakage was relatively uncommon.

Among the finished artifacts of unknown function may be included the somewhat varied series in plate 18; *a* and *b* more particularly are representative of a small group in which specimens have one face flattened, the other markedly convex, but both chipped. In all cases the flattened surface has been beveled off at the wider end, with a curved cutting edge resulting where the plane of beveling intersects the convex back. Along the converging sides and the narrowed butt the secondary marginal chipping has been worn or ground down to a marked degree. If we assume that these objects were hafted, the edges may have been deliberately blunted to prevent their cutting the lashings which secured the blade to the handle. In *b* the chipped cutting edge is at the narrow end, but the remaining margin is again ground down. This specimen lacks the planoconvex form and is not beveled. Perhaps all may be regarded as adz blades designed for hafting.



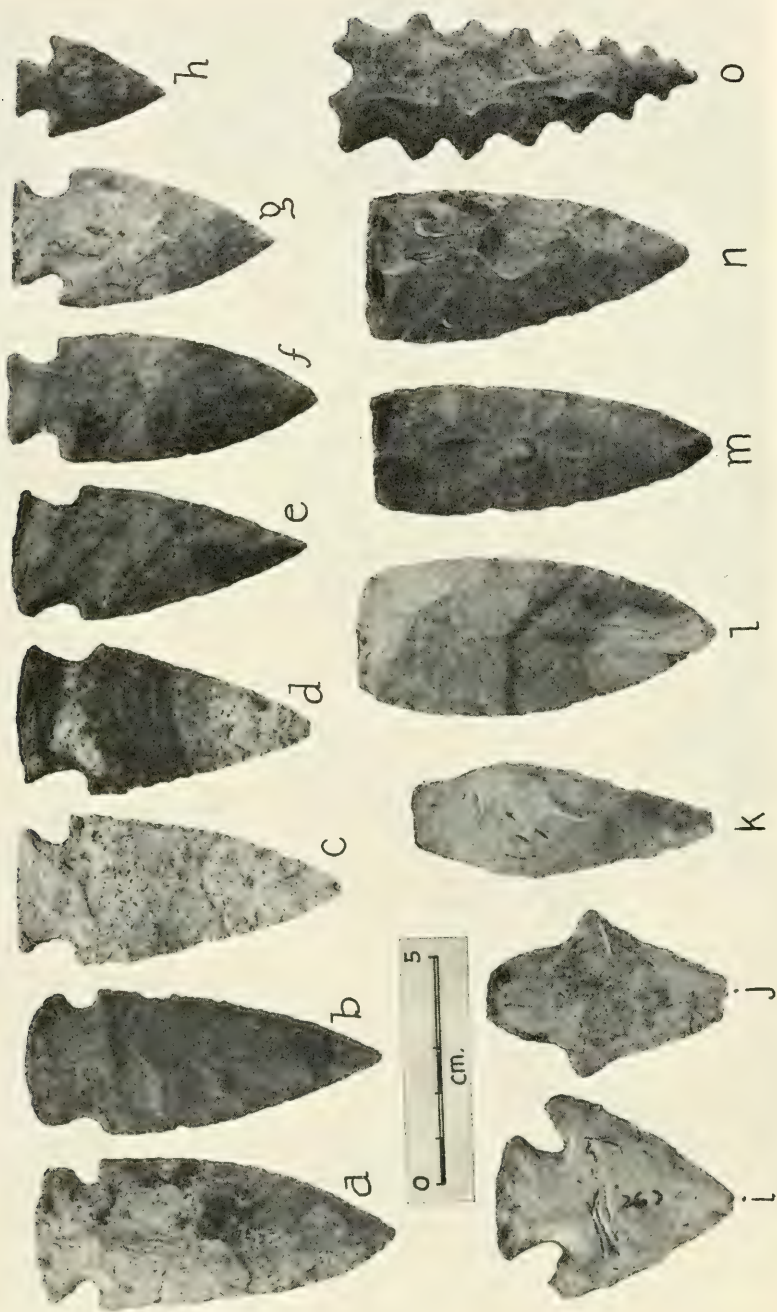
ANTLER ARTIFACTS FROM RENNER VILLAGE SITE.



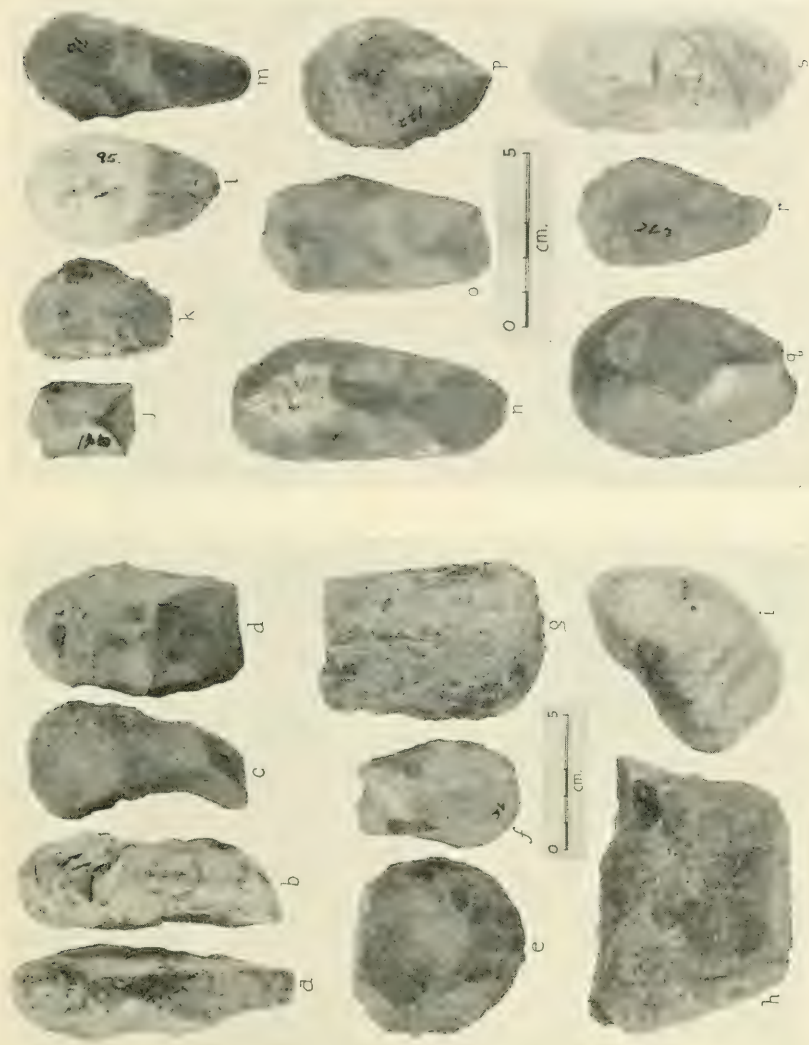
BONE ARTIFACTS FROM RENNER VILLAGE SITE.



MISCELLANEOUS STONE, BONE, CLAY, AND COPPER ARTIFACTS FROM RENNER VILLAGE SITE.



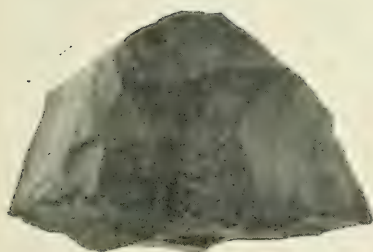
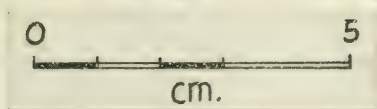
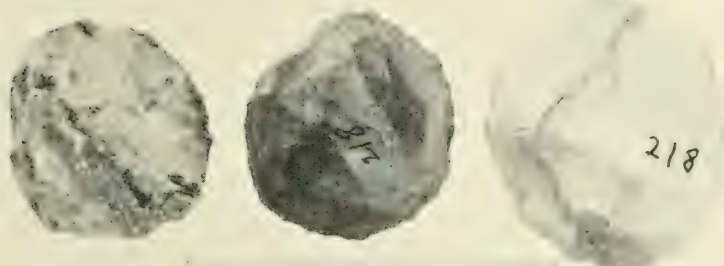
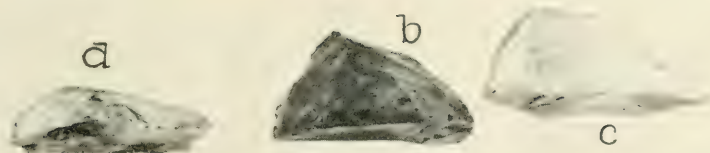
CHIPPED PROJECTILE POINTS AND BLADES FROM RENNER VILLAGE SITE.



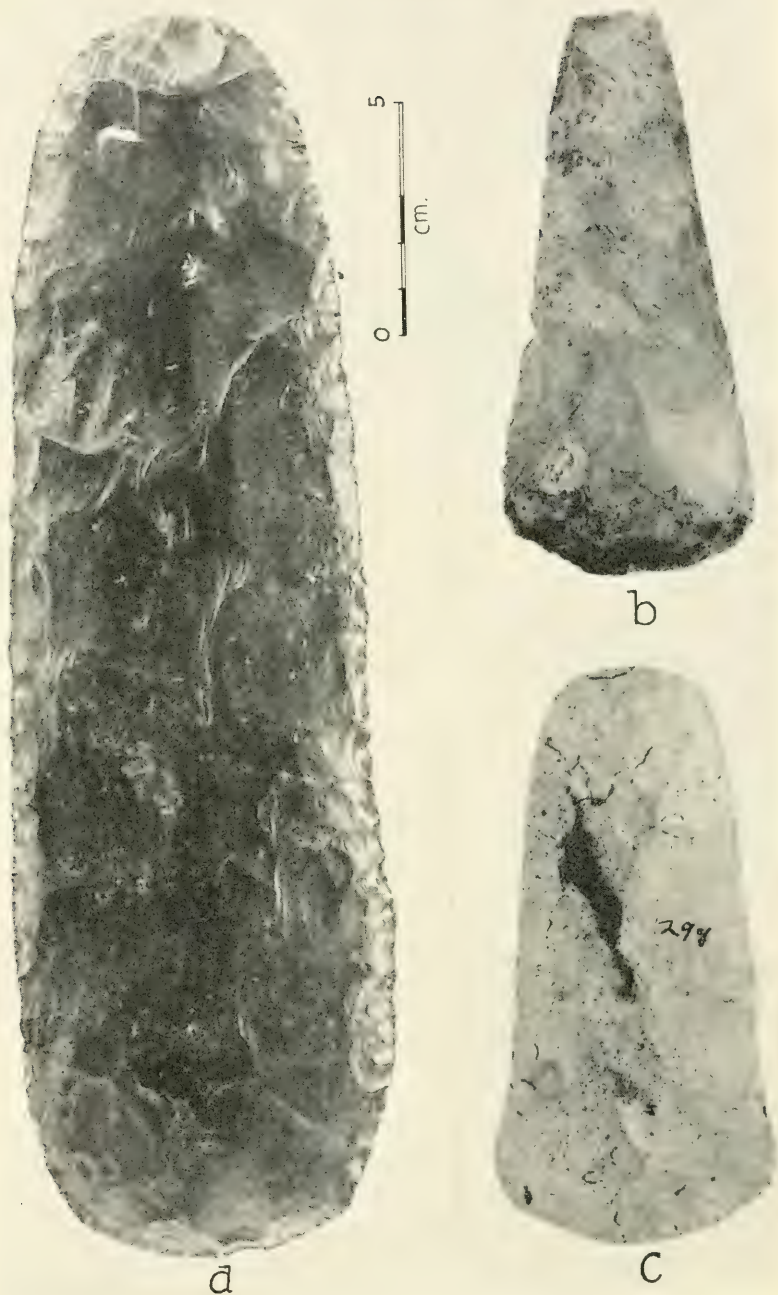
CHIPPED SCRAPERS FROM RENNER VILLAGE SITE.



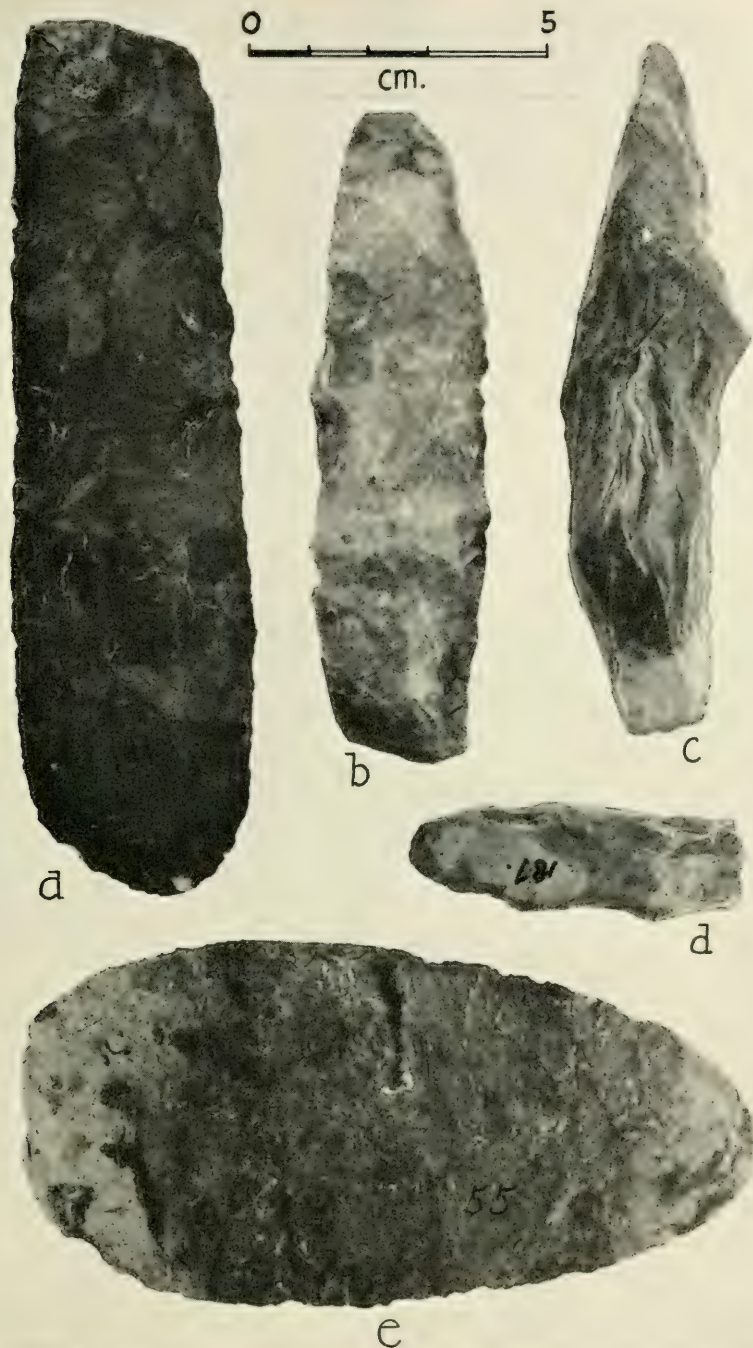
FLAKE KNIVES, DRILL POINTS, AND STEMMED SCRAPERS FROM RENNER VILLAGE SITE.



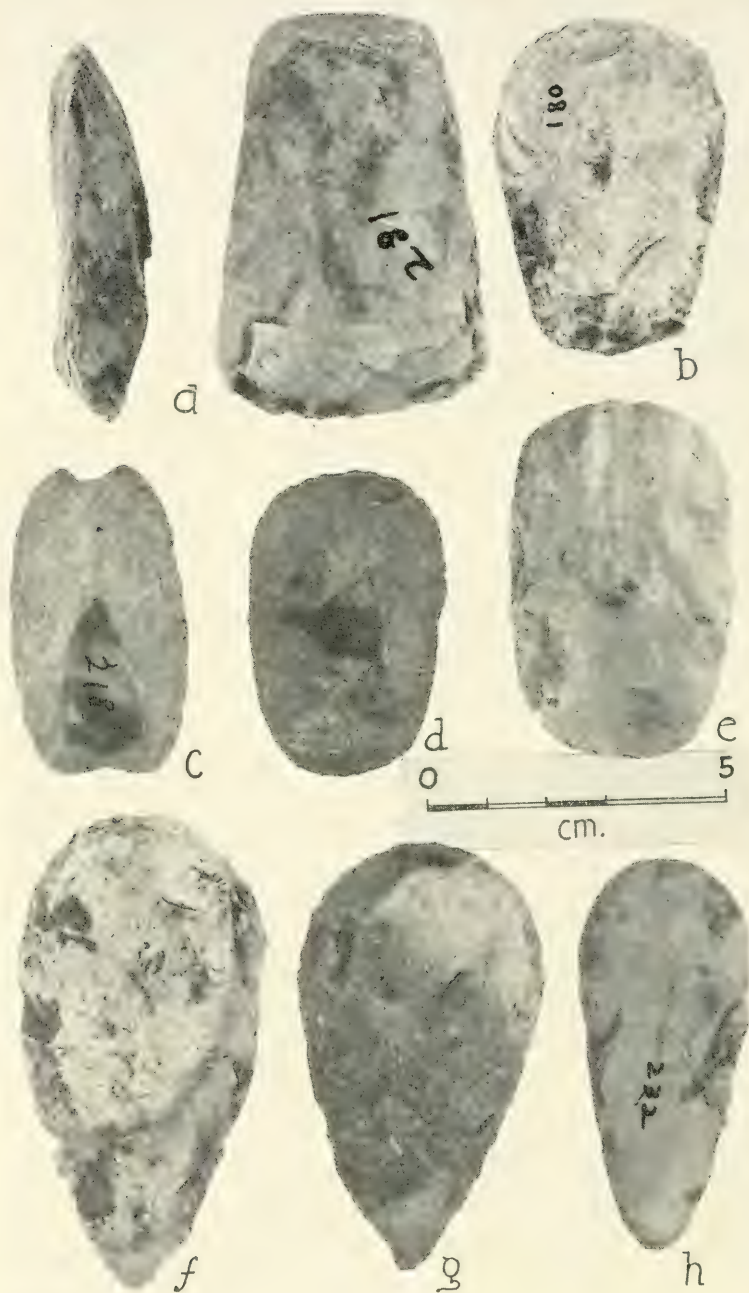
CHIPPED DISKS AND CONES FROM RENNER VILLAGE SITE.



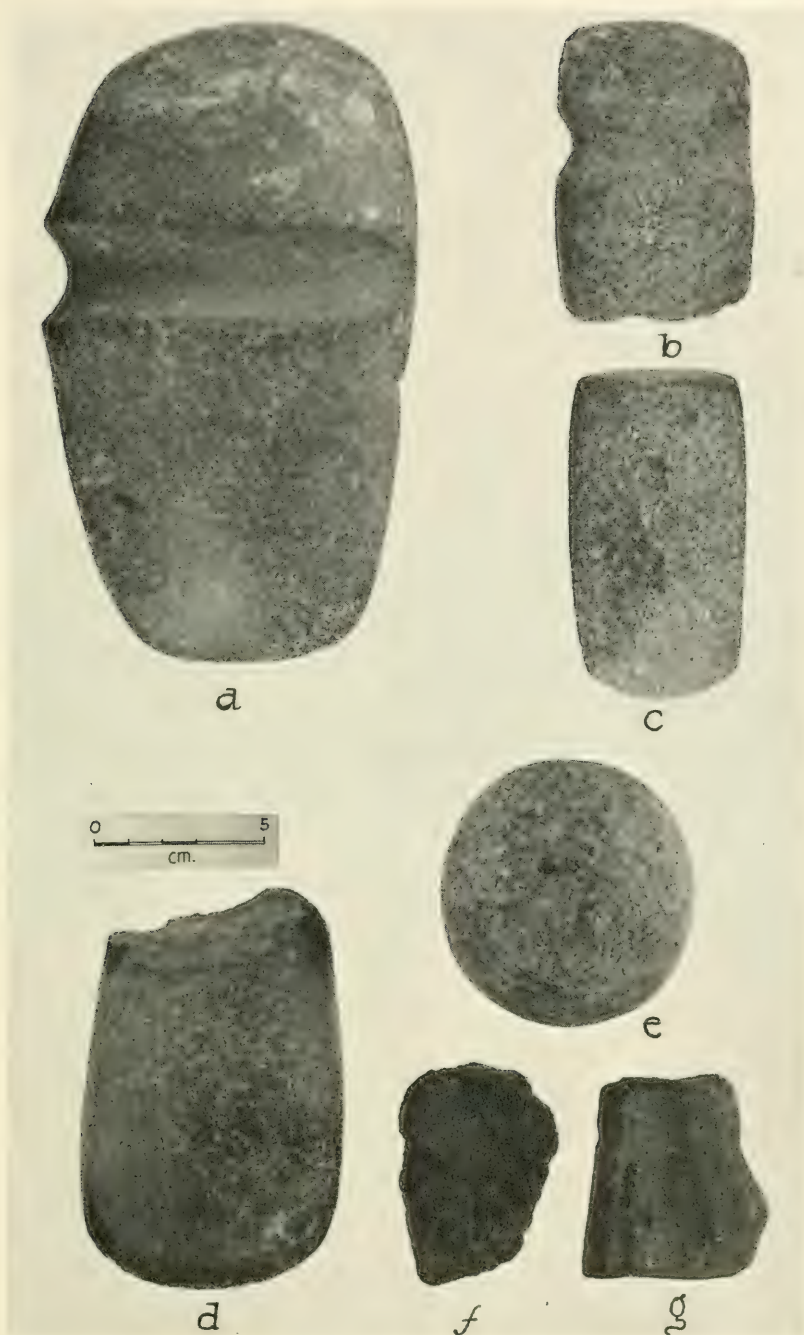
CHIPPED ARTIFACTS FROM RENNER VILLAGE SITE.



CHISELLIKE FORMS AND BLADE FROM RENNER VILLAGE SITE.



MISCELLANEOUS CHIPPED ARTIFACTS FROM RENNER VILLAGE SITE.



GROUND STONE OBJECTS AND ABRADERS FROM RENNER VILLAGE SITE.



ARTIFACTS OF STONE, BONE, AND TEXTILE, FROM VARIOUS SITES NEAR KANSAS CITY, MO.

A sinker or weight is vaguely suggested by *c*, which is chipped on both faces and has a low median ridge on the surface figured. The retouched edges seem to be slightly worn, and there is a wide shallow notch in either end; *d* and *e* are also flaked on both faces and have finely retouched edges. The former has a low keeled back and the edges are slightly polished; *e* lacks evidences of wear or use.

Varied uses would seem to be indicated by objects such as those shown on plate 18, *f-h*. Though lacking the typical planoconvex profile the rounded broad end sometimes is worn in a manner identical to the end scrapers. In other instances, slightly blunted or battered margins suggest use in cutting or sawing. Some of the pieces show little or no retouching beyond the primary flaking needed to bring them to their present form and size. These may represent blanks or generalized forms from which projectile points or other useful implements could eventually have been made.

The three specimens described in the preceding paragraph actually stand at one end of a gamut of worked flints that at the other extreme grade into what are probably cores and rejectage. Many are broadly lanceolate, almond-shaped, or roughly triangular in outline; others tend toward a quadrilateral or elliptical form, or are merely irregularly shaped lumps. They are generally thick, and the surfaces, as also the edges, show only coarse primary chipping. Edges are seldom polished or blunted and in their present condition give little or no evidence of ever having had much use. In size they range upward to maxima of ca. 120 mm. long, 75 mm. wide, and 35 mm. thick, the larger pieces being the most roughly made. Whole and fragmentary, they occurred nearly everywhere—in cache pits, in the midden-filled occupational stratum of the site, and on the surface. They included all the more common varieties of raw material otherwise utilized in the fashioning of finished artifacts. It is possible that some represent quarry blades, i. e., incipient tools roughed out at the quarries and carried into the village for final shaping as time permitted. Others perhaps represent cores left after the removal of spalls from which arrowpoints, flake knives, or other smaller implements were made. A few may have been intended as heavy duty agricultural, digging, skinning, or chopping tools, either lost, discarded because of flaws or other intractabilities, or left behind when the village site was finally abandoned by the natives.

WORK IN GROUND STONE; UNWORKED STONE

Artifacts of ground stone were much less common than chipped forms, and the range of types was also more limited. Heavy duty implements were made of tough crystalline stone—green diabase for axes and celts, quartzite for balls and hammerstones. Less often

such relatively soft materials as sandstone and limestone were utilized. Neither diabase nor quartzite is native to this portion of the Missouri valley, but both occur locally in boulders in the glacial drift. Most or all of the sandstone is dark reddish brown or yellowish in color, rather coarse-grained, friable when rubbed, and of excellent abrading quality. I suspect that it is probably assignable to the Cretaceous Dakota formation. This horizon outcrops over a large area in the Smoky Hills and Blue Hills in north-central Kansas, 120 to 150 miles, airline, west and northwest of the Renner site. Via the Kansas, Blue, and Republican Rivers, these deposits could have been reached on foot by a journey of approximately 175 to 200 miles. Whether nearer sources of the material are available I do not know. Limestone, of which little use seems to have been made, was available in unlimited quantities along the bluffs of the Missouri River.

Axes are represented by four specimens: Two finished, one unfinished, the fourth fragmentary. Of these, only the last two were excavated by our party. The largest and best example (pl. 19, *a*) is from the west edge of the new highway slab ca. 50 yards west of the Renner residence. It was found by highway workers, while setting forms just prior to pouring the slab, and was immediately brought to us with traces of the enclosing native soil still adhering. It measures 185 by 105 by 67 mm. and weighs $4\frac{1}{2}$ pounds. The slightly damaged poll is rounded, and the cutting edge, 60 mm. long, is nicked from use. In transverse cross section the shape is quadrilateral, with the wide surfaces bulging or convex. The groove is 24-28 mm. wide and about 7 mm. deep, with a very slight bead or flange on each side. The ungrooved fourth side is flat and smooth. The entire surface, though nicked or slightly uneven in spots, has been carefully ground down, and the blade is polished. A much smaller ax, found during the preliminary grading of the highway cut prior to our arrival, was presented by H. M. Kleifeld, superintendent of construction. Its dimensions are: Length, 88 mm.; width, 58 mm.; thickness, 38 mm. The poll is flattened, with a slight worn depression; the blade is badly battered and now lacks a definite cutting edge, so that the original length of the piece is uncertain. There is a shallow groove on three sides; the fourth is slightly depressed or hollowed lengthwise. In cross section this ax is a little flatter than the first. Though it is well made and shaped (pl. 19, *b*), the surface retains the pecked or dimpled texture that final grinding and polishing have obliterated in the larger ax.

From square 70E1, at a depth of 20 inches, came the specimen illustrated in plate 19, *c*. It measures 97 mm. in length and has every appearance of being an unfinished ax. The curved blade is thick and blunt, never having been ground to a cutting edge. There is no groove, nor has the surface been finished through grinding. In shape

and cross section it closely resembles the smaller ax above described, except for the groove and marks of hard use exhibited by the latter.

In pit 12 was found a fragment of what was almost certainly a grooved ax. Both poll and bit are broken away, but the remaining section shows a three-quarters groove, with the fourth side flat and well smoothed. The size of the complete specimen is of course uncertain, though it seems to have been only slightly larger than the small axes previously noted. Except on the broken areas, surface finish is superior to the others.

Six or seven broken celts were found. These invariably show an elliptical cross section quite unlike that of the axes, a thick rounded butt, and a smoothed curving bit. In no case has the finely dimpled surface generally been smoothed, though sometimes so near the blade. Maximum width is also usually toward the blade. Some have a chipped or broken bit; others, including the largest, have only a very smooth edge worn to a high polish as though from long rubbing against soft or greasy material (pl. 19, *d*).

A small hematite celt may be noted here (pl. 11, *k*). Complete, it is 57 mm. long, with a maximum width at the bit of 34 mm. The butt is somewhat irregularly shaped, probably owing to unevennesses in the raw material. The sides are squared and carefully finished. Except for a few nicks and scratches, particularly about the butt, the surfaces generally are characterized by a high polish.

Stone balls, made by percussion from chert nodules, averaged 57 to 77 mm. in diameter. All were evidently pecked or battered into approximate spheroidal shape, with some effort in at least one instance to smooth the specimen off afterward by grinding. Surfaces are rough and pitted (pl. 19, *e*), and, as might be expected, perfect symmetry was never achieved. The three specimens recovered show variations of 5 to 7 mm. in their individual diameters. Two were graded out of the highway cut; the third and poorest of the group is from pit 24.

Artifacts of limestone are three in number. Of special interest are the two objects figured in plate 11, *b* and *c*; *b* is made of crystalline limestone, or calcite, of a dirty white color. Funnel-shaped, it has a flat lip, surrounding a cavity 16 mm. deep, and a short solid stem 9 mm. in diameter, which has been ground off flat at the end. Exterior surfaces, as well as interior, have been carefully and evenly dressed down, though the edge of the rim bears a few old and some recent nicks. Viewed from above, the specimen is slightly elliptical, with a maximum width of 36 mm. and a length (estimated by projection, due to rim fracture) of about 42 mm. The height is 35 mm. Along with *a* in the plate, which is slightly larger and molded of clay, *b* was found in pit 12.

Somewhat dissimilar is *c*, which is made of soft white chalky limestone. Mammiform in shape, it too has a flat lip but instead of a protuberant stem has a rounded conical apex. The cavity is larger and deeper (22 mm.); the walls average 4–6 mm. in thickness. The interior surface is somewhat uneven, but the exterior is well finished. Height is about 30 mm.; diameter, as computed from the radius, was approximately 62 mm., and the shape appears to have been slightly elliptical. As is also true of *a* and *b*, no satisfactory explanation has come to mind for the use of this object. It has been suggested that some or all were weaning nipples, paint or medicine mortars, or "eye cups," but there is not the slightest evidence for any of these uses.

In plate 11, *j*, is shown a small paint mortar fashioned from soft white limestone. One surface of a roundish pebble about 50 mm. in diameter has been flattened slightly to hold the piece upright. The upper surface has a depression 35 mm. across by 7 mm. deep. Possibly as a result of deterioration in the ground, the material at present seems entirely too soft to have been suitable for grinding purposes. The specimen may have been used originally for mixing small quantities of pigment or other materials rather than as an ordinary mortar.

Pieces of sandstone with grooved or worn surfaces were moderately plentiful. Somewhat unexpectedly, however, none appeared to be from long boat-shaped paired buffers of the type common in many Plains archeological sites. The fragments found were irregularly shaped blocks, which gave not the slightest evidence of representing intentionally formed implements. They varied in thickness up to 3 or 4 cm. and in greatest diameter from 28 to 90 mm. Sometimes the entire surface is worn flat; at other times, broad shallow grooves or short, deep, narrow ones crossed or crisscrossed one or more faces (pl. 19, *f–g*). The latter may have been a result of awl sharpening, and perhaps the broader markings were left in rubbing down arrowshafts or other larger pieces. In view of the evident abundance of arrow-points, it seems a little strange that no specialized implements for dressing the shafts were present, particularly in view of their abundance in other nearby sites of distinct cultural affiliations.

Unworked or slightly worked stone objects include principally the various hammer and pecking stones, and one or two mullerlike pieces. The former are little more than stream-worn quartzite boulders and pebbles of a size convenient for grasping in the hand. They are of circular or subrectangular outline, with battered ends or sides. None exceeds 118 by 76 by 59 mm., and some are much smaller. Presumably, they were used for all sorts of heavy pounding; for shattering chert boulders, roughing out specimens to be ground down, etc.

Besides sandstone the prehistoric inhabitants of the Renner site possessed one other material suitable for abrading purposes—pumice,

or scoria. This, of course, does not occur geologically in situ within many hundreds of miles of the Renner site, and the fragments found in all likelihood were gathered by the natives as flitage along the Missouri during or after the spring floods (cf. Wied, 1843, p. 125). The largest of our specimens measures about 9.5 cm. in greatest dimension. The material varies from red to blue-gray in color. Evidences of wear are usually limited to flattened areas of varying size; there are no grooves such as would result from the grinding of bone awls, wooden arrowshafts, or similar materials. In view of the relative softness of pumice, and from the nature of such wear facets as are manifested, it would seem that the stone may have served other ends. There is historic evidence that the Omaha and other tribes along the Missouri used pumice to rub down animal hides (Wied, 1843, p. 125; James, 1823, vol. 1, p. 221), and it is possible that earlier peoples in the area did likewise. The finding of unworked lumps that still retain their smooth outer surface may be due to the fact that these particular pieces had simply never been used, or else, conceivably, to the fact that the material was new and mysterious and something to be wondered at as a stone that floats on water.

PIGMENT MATERIALS

A number of worked lumps of hematite and limonite were found. Almost without exception these have one or more flat surfaces with fine striae from grinding, but none are shaped into recognizable tools or ornaments. Rubbed, they produce a streak or stain varying from bright red to a dull yellowish brown. Undoubtedly they represent a source of pigments, from which suitable paints could be made by mixing with animal fat. In what manner the resultant paint was utilized, whether for the face and body, for clothing and articles of dressed skin, or other uses, is not known.

In addition to the more or less pure hematite and limonite, there were several lumps of softer gritty material at first thought to be remains of prepared cakes of paint. Closer scrutiny by competent mineralogists leads to the conclusion that, in reality, these include pieces of impure fine-grained ferruginous sandstone and, in other instances, residual clay from the weathering of certain limestones. It may be observed that the latter, where containing a considerable proportion of iron, sometimes produces a red powder quite the equal in intensity of color to some of the poorer grades of hematite. None of the samples found shows grinding facets, which may be due either to the softness and rapidity of disintegration of the material or else to the fact that it was not regularly utilized by the natives.

THE STEED-KISKER SITE

Village Remains

Quite different in character from the remains discussed in the preceding pages were others unearthed at a village and burial site on the lower Platte River, about 2 miles above its junction with the Missouri (see fig. 1). As has been noted elsewhere, the Platte follows a devious course through a well-developed flood plain about a mile wide, bordered by irregular bluffs. As its valley approaches the larger trench of the Missouri, the rolling uplands between the two form a steadily narrowing wedge. The tip of this wedge is a prominent south-pointing ridge of hills rising nearly 200 feet above the convergent flood plains and forms a conspicuous landmark to the traveler up the valley. At the base of the hills, just within the Platte Valley, lies the little town of Farley. Three or four miles to the southwest, almost directly across the Missouri, were found the bones of the "Lansing Man" in 1902. Lansing itself is 4 miles distant, while 5 miles to the northwest is the city of Leavenworth.

Unlike the steep bluffs lining the Missouri River bottoms, those along the Platte have a ragged and uneven front and usually lack the abruptness of the former. Salient hills alternate at frequent intervals with protected reentrant alcoves and short embayments, often with fine terraces. The site under consideration occupies the first of this series of terraces, going upstream, on the west (right) bank of the Platte, immediately northeast, and within a half mile, of Farley. Elevation of the flood plains is generally between 760 and 780 feet above sea level; the village terrace lies entirely above the 785-foot contour.

The terrace begins about 150 yards from the town limits, whence its front runs irregularly east by slightly north to the bank of the river about 600 yards distant. Its surface slopes upward to the north and northwest to a series of rounded hills and ridges. The habitable width of the terrace nowhere much exceeds 200 yards, and the area available for human occupancy is still further reduced by several ravines draining the higher hillsides. Two of these cut through the western portion, and a third is near the northeast corner. All are dry except in time of rain, and their present depth is probably due in part to modern agricultural activities and removal of the original sod and forest cover. To a considerable degree, however, they evidently follow former natural drainage lines which would have been ill adapted to habitation. The hills north and west of the terrace protect it somewhat against the cold winter winds. Extensive arable bottoms lie to the south, and the river skirts its eastern margin for some 200 yards. Normally the water surface of the stream is 35 feet or more below the terrace. None of the ravines contained springs, and local residents

insisted that the only known natural source of surface water was the river.

According to information supplied by long-time residents of Farley, the terrace as well as the adjacent bottoms and hills were formerly well timbered. Today nearly all cultivable ground has been logged off, though here and there on the bottoms an occasional large oak or elm still stands. The hills retain remnants of the old forest cover, but on the terrace wheat, corn, alfalfa, and other crops cover the site. Its general appearance may be judged from plate 21, *a*, in which the view is eastward across the site toward the Platte.

The limits of occupation can be given in approximate terms only. Almost no traces of aboriginal activity were found in the ditches along the dirt road running in a northerly direction out of Farley past the terrace and through the hills. About 600 yards from town a side road on the half section line leads due east to and then along the river bank. Where this cuts the lower slope of the hills there were evidences of at least one earthlodge pit. From this it would appear that habitations were scattered up the slopes where flat spots of sufficient size were available. For the most part, however, the village appears to have lain east of the first and south of the second of these roads (fig. 7).

The site is unequally divided by a section and property lines. The larger eastern portion, including also the burial hill, is owned by William Kisker and farmed by his son Herman. The remainder belongs to Henry Wehe, of Farley, and is under lease to C. A. Steed. Of the farmsteads shown in figure 7, only that occupied by Steed actually lies on the old village area. Most or all of the individuals named were aware of the presence of "relics" in their fields. Prior to our work, however, there had been no digging whatever on the terrace, and only a little random prospecting on the hill which proved to be the burial ground. There appear to be no published records of the remains prior to those resulting from our investigation (Wedel, 1939).

When our work began, the presence of growing crops precluded a satisfactory surface examination of any except a small fraction of the site. A freshly cultivated cornfield west of the property line was carefully hunted over, revealing the presence of sherds, flints, and grass-impressed clay on both sides of the gully running southeast from the Steed farmstead. Persistent search on all likely spots disclosed no subsurface indication of house floors, although the bits of roofing clay indicated the former presence of earth lodges here or nearby. Our efforts were finally rewarded with a group of trash-filled pits and a small midden deposit lying on the sloping terrace front about 550 feet southeast of the farm buildings. These were between the two west gullies, and between the 780- and 785-foot contours (fig. 8).

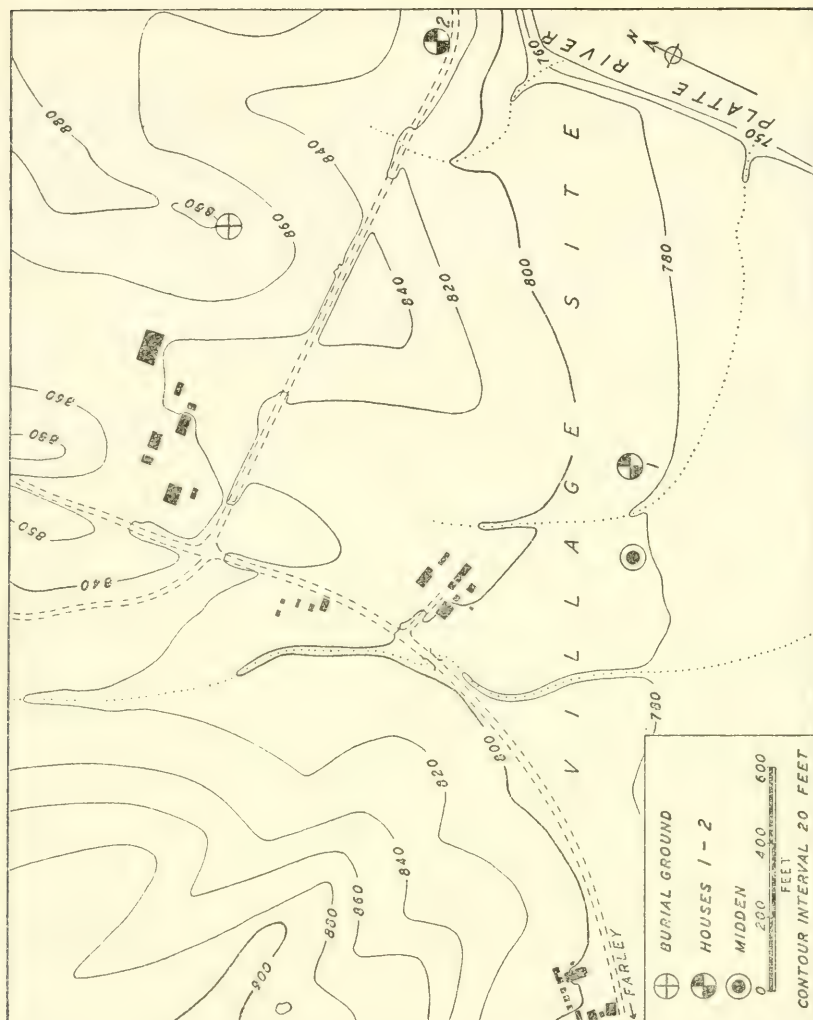


FIGURE 7.—Contour map of Steed-Kisker site and surroundings.

The midden covered an irregular area about 25 feet across, apparently laid down in a slight natural hollow on the terrace front. The maximum thickness, about 36 inches, occurred on the west or up-hill edge, whence the deposit thinned unevenly down the slope. Potsherds, flints, ash streaks, charred corn and grass, bones, stones, and similar detritus were scattered through the rich black topsoil zone. Four pits also occurred within this area. Their contents did not differ markedly from the general refuse mantle and their presence was unsuspected until excavation showed them penetrating the yellow sub-soil beneath the midden. It is possible that the midden is due in part to scattering of material by modern cultivation from the upper layers in the pits, but its extent and depth are too great to be wholly

accounted for in this manner. As midden 1, this debris-filled area was entirely worked out in 5-foot squares.

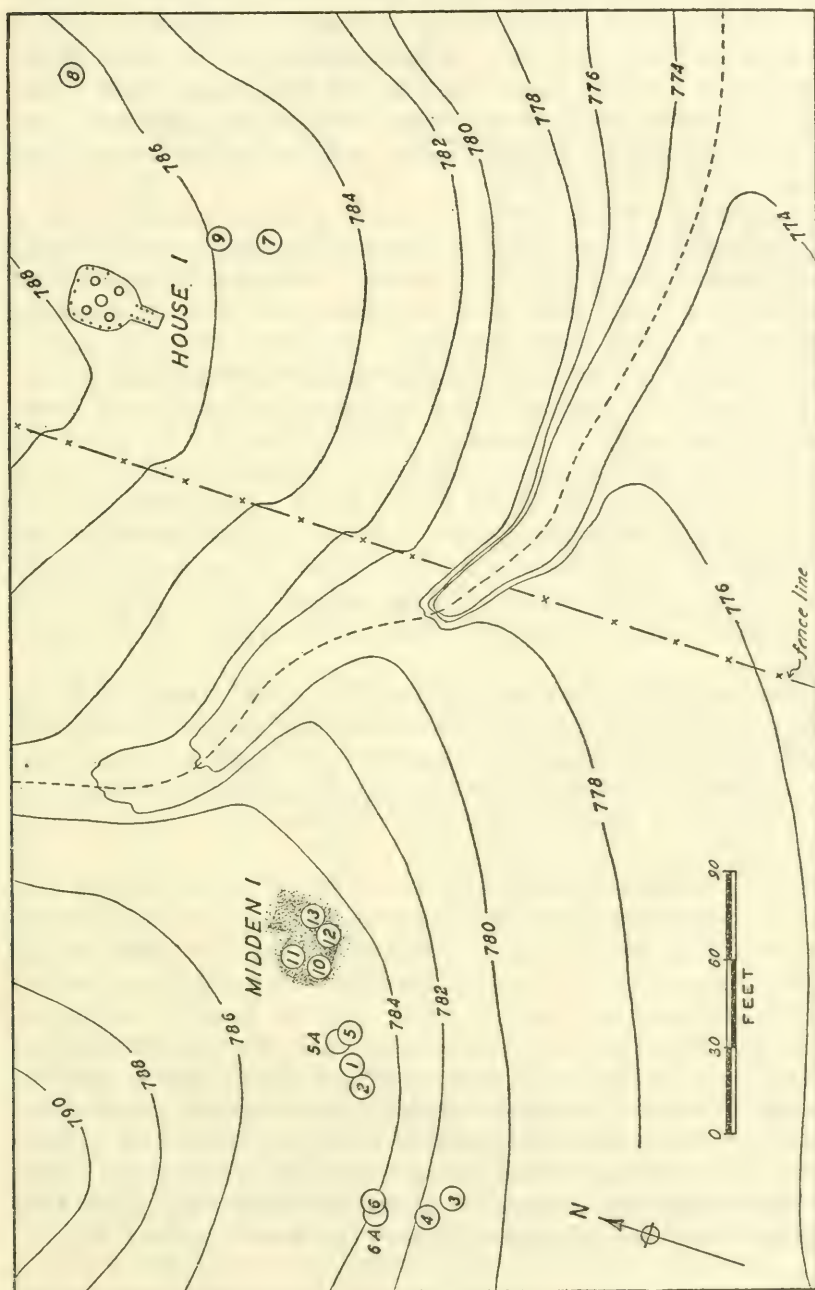


FIGURE 8.—Contour map of Steed-Kisker village site, showing location of house 1, midden, and cache pits.

Eight other cache pits, numbered from 1 to 6A, were opened on the slope 5 to 35 yards southwest of midden 1. All contained rich black soil mixed with ash lenses, bones, and broken artifacts. Cultivation and slope wash had evidently reduced their depth as well as mutilated the outline of their upper portions, but to what extent is not determinable. None exhibited the bell-shape, widest at or near the bottom, which characterizes many of the prehistoric and historic caches of the western plains, and the deepest was only 42 inches.

The presence of the midden and cache pits immediately below a well-drained flat large enough to accommodate one or more houses led to renewed search to their northwest. Although the results were uniformly negative, I am still of the opinion that such structures did once exist here. Possibly tests made under more favorable ground conditions and on more extended scale would yet reveal their remains. If, however, the postulated lodges rotted rather than burned down, their discovery might be extremely difficult under any circumstances.

Dimensions and contents of all caches found are summarized in table 7. Pits 1 to 6A in the list lay southwest of midden 1; pits 7 to 9 were east and southeast of house 1, to be described presently; and pits 10 to 13 were in midden 1. In the case of the last group, the field number have been changed from midden 1, pit 1, pit 2, etc., to pit 10, pit 11, etc., and added in their proper sequence to the others listed.

Immediately after harvest our activities were transferred to the eastern portion of the terrace. Here again unfavorable ground conditions made prospecting a vexing task. A single house site, and three nearby pits were at length found and opened, and from them were obtained a reasonable quantity of sherds and stone and bone artifacts.

House 1.—The only habitation site of which the entire floor area could be worked out was situated on a well-drained lobe of the terrace 200 yards east by slightly south of the Steed residence and 15 or 18 yards east of the property line fence. It lay between the 787- and 788-foot contours about 20 yards from the front of the terrace. There was no surface evidence of a pit, and only meagre traces of pottery and wattle clay were scattered about. These occurred through the upper 12 inches of topsoil over an area 20 yards across, centering as we subsequently learned about the house and its associated pits. Because of this refuse mantle the actual limits of the old house excavation remained uncertain until our digging had been carried down to the normal surface of the brown clay subsoil.

TABLE 7.—*Summary of dimensions and contents of pits at Steed-Kisker site*

No.	Depth	Diameter		Contents
		Top	Bottom	
1-----	<i>Inches</i> 34-21	<i>Inches</i> 64	<i>Inches</i> 66	Incomplete human mandible and skull fragments, projectile points, socketed antler object, awl, sherds, 6-inch ash layer over flat floor.
2-----	42	55	44 × 42	Hematite, charred deer jaw, portions of two bone implements, few sherds, 1-2 inch layer of charred corn, husks, grass, etc., on flat floor.
3-----	25-18	51 × 53	50 × 48	Shell hoe, unworked shells, awl point, flint knife, projectile points, sherds, bones; 6-inch ash layer on flat floor.
4-----	36-17	56 × 58	54 × 56	Sherds, abrading stones, deer mandible; depressed floor.
5-----	24-18	50 × 52	48 × 51	Sherds, abrading stones, carnivore maxilla, charred corn just under plow sole; intrusive into 5A.
5A-----	14-10	64 × 82	64 × 82	Burnt limestone boulders, fragments of straight-walled bowl; northwest side cut out by pit 5.
6-----	18	48 × 50	46 × 48	Sherds, flints, animal bones, charred vegetal material, and fragments of twisted cordage.
6A-----	26	58 × 60	58 × 62	Sherds, hematite, abraders, charred wood on floor; partially intrusive into pit 6.
7-----	24	42	32	Very poor yield; bits of wattle clay, sherds, flint blade.
8-----	35	62	46	Sherds mostly grit-tempered, scrapers, projectile points, wattle clay.
9-----	30	63 × 50	63 × 50	Sherds, flints, scrapers, burnt bone, wattle clay; depressed floor.
10-----	33	35 × 30	35 × 30	Originally midden 1, pit 1; 10 inches into subsoil.
11-----	40	54	54	Originally midden 1, pit 2; sherds, hematite, pumice, scrapers, stone disk fragments, scrapers, charred organic matter; flat bottom.
12-----	30	67 × 56	67 × 56	Originally midden 1, pit 3.
13-----	?	54 × 43	54 × 43	Originally midden 1, pit 4.

The house had been built within or over a subrectangular round-cornered excavation 22 to 23 feet across (fig. 9 and pl. 21, *b*). The outer edge of the floor lay 2 to 2.5 feet below the surrounding ground surface, being slightly deeper on the uphill portions, and the floor sloped downward about 6 inches to the rim of the fireplace at the center. The fireplace was dug out before its nature was recognized, but it measured about 30 inches in diameter by 5 to 6 inches in depth. A few traces of ash and charcoal were noted in the basin. Four large central post holes 7 to 8 feet from the center of the fireplace formed a quadrilateral roof support 10 to 11 feet on each side. Each

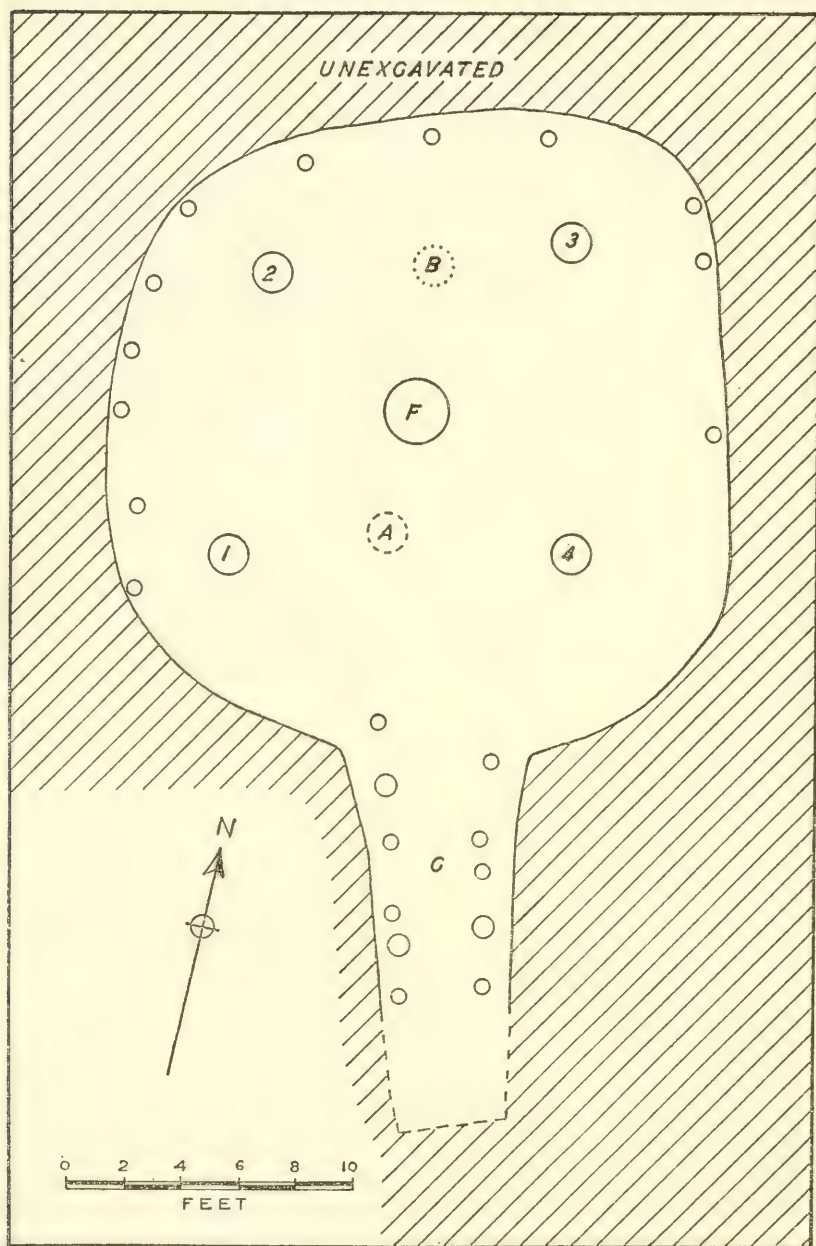


FIGURE 9.—Plan of house 1, Steed-Kisker village site: 1-4, Primary roof supports; A, pocket cache or mortar hole (?); B, post hole or pocket cache (?); C, entrance passage; F, fireplace.

of these holes measured 15 inches across by 16 to 20 inches deep. The secondary and outer series of post holes lay at and just inside the edge of the pit. These occurred at intervals of 2 to 4 feet; wider spacing probably indicates failure to locate the former position of a post or posts. They measured about 6 inches in diameter and 6 to 10 inches in depth. Not all the original holes in this series could be found, though enough came to light to permit determination of the approximate location of the missing ones. The long axis of the floor was north to south, and at the south end two converging lines of small holes defined an entrance passage approximately 3 feet wide by 10 feet long. The floor of the passage sloped upward toward the ground surface, but owing to modern farming activities its outer end could not be determined with certainty.

Midway between the two primary post holes in the northeast and northwest quadrants, and 5 feet due north of the hearth, was found a fifth hole, 18 inches across by 16 inches deep. Its purpose is uncertain, though I am inclined to suspect that it may have held a post set up to support a sagging beam. About 4 feet south of the fireplace was another hole of about the same size, not, however, in line with the south pair of primary supports. This may have been a small cache. A similar feature occurs rather consistently in the same relative position in prehistoric earth-lodges in the Blue River drainage and elsewhere in southeastern Nebraska, but direct evidence as to its meaning is still wanting.⁸

There is some reason to believe the house may have been damaged or partially destroyed by fire, since a 2- to 4-inch layer of burnt grass, twigs, and sticks was found just above the floor. The general absence of charred beams and posts, however, does not favor the view of its abandonment and destruction entirely by fire, and it is possible that the burning took place after the superstructure had collapsed through the slower agencies of decay. Artifacts were generally rare on the floor itself, and, aside from the two small pits just noted, there were no sub-floor caches in the house. A sandstone slab measuring 16 by 8 inches, perhaps for grinding or pounding purposes, lay on the floor near the northwest center post hole. It is shown in situ in plate 21, *b*; a short time later, while we were occupied with other matters, the slab was carried away by souvenir hunters along with several surveyor's arrows and other conveniently portable items.

From ground surface to floor level the fill within the house pit was mixed with broken pottery, projectile points and flints, bits of charcoal and wattle clay, and similar debris. The relative abundance of this debris in the east half of the excavation led us to believe for a time that we had found a deep midden—a belief that was given

⁸ Unpublished notes of A. T. Hill, who suggests the possibility that these pits mark the former position of upright wooden mortars set into the floor.

up when the central post holes began coming to light. It seems probable now that after collapse of the lodge the resulting depression was used as a refuse dump by the occupants of other nearby units of the village.

As to structural details of the house, it may be inferred that the four central posts, 10 inches or less in diameter and perhaps 10 feet in height, carried four beams to form a square above the hearth area. Smaller posts, not over 4 inches in diameter and 5 or 6 feet high, were set just within the edge of the house pit and were likewise connected with stringers at the top. Against these were leaned short poles resting on the original ground surface just back from the edge of the excavation. Efforts on our part to verify such a placement by careful stripping of the rim of the pit brought only negative evidence. This was perhaps due to modern cultivation, which, penetrating to a depth of 7 inches or more, may have destroyed such traces of wall base as once existed. The roof form is still less certain. It may have consisted of converging rafters, none much exceeding 10 to 12 feet in length, with their lower ends resting on the outer row of stringers and their tips almost meeting at the smoke hole directly above the fireplace. This would have given a subhemispherical appearance to the finished structure when the grass and sod were in place. Alternatively, shorter rafters could have covered only the narrow zone between the exterior stringers and the central square, the latter area being subsequently covered with a flat roof. A priori, such a roof would seem to have been less well adapted to a region where the annual precipitation averages 35 and sometimes reaches 50 inches. On the other hand, rafters running to the smoke hole would have had only the lower third of their length between the two rows of stringers, which might or might not have provided adequate support for the earth covering their upper portions on the central part of the roof.

While only one lodge site was completely worked out, there is evidence to show that this was not unique. Remnants of another about 20 feet across and 2 feet deep, with vertical sidewalls, were found in the road cut in the northeast corner of the terrace. The remaining strip of floor was less than 4 feet wide, and no postholes or firepit could be found. Basins possibly representing shallow caches were present and yielded a few artifacts. Lying 400 yards northeast of house 1 on the 830-foot contour, this was tentatively designated house 2 (see fig. 7).

The bits of burnt grass-impressed clay found just east and also south of the Steed farm buildings suggest the presence of additional sites there, as do the refuse-filled caches and midden deposits between the two gullies in the west part of the site. More recently, since close of our work, I have been informed by Mr. Shippee that fall plowing has

disclosed similar evidence on the point of a low hill about 200 yards north of house 1 and south of the east-west road. Generalization from the single example actually worked out is, of course, hazardous, but, from the surface materials found nearby at the time of our investigations and since, it seems safe to conclude that the aboriginal occupants of the terrace dwelt frequently, probably characteristically, in semi-subterranean earth-covered pithouses. These further seem to have been very similar in type to those regularly used by peoples of the Nebraska Culture along the Missouri from its great bend to Thurston County, Nebr.

Three refuse pits, originally no doubt dug for storage purposes, were opened near house 1. Pit 8 lay 80 feet east-northeast of the fireplace; pits 7 and 9 were respectively 57 and 44 feet southeast from the hearth and about 16 feet apart. Their dimensions and contents have been summarized in table 7. It is possible that one or more of these belonged to the house; there is nothing to prove or disprove such an association.

FOOD REMAINS

Evidences as to the food habits of the natives were relatively meagre, but suggestive. It is certain that they had corn, since charred kernels, cobs, ear-stalk fragments, and husks were recovered from pits 2, 6, and 11. The cobs were all small (pl. 25, *e*), complete specimens varying from 3 to 7.5 cm. in length and from 1.2 to 2.3 cm. in diameter. Usually they appear to have had 10 rows of kernels, though in one or two specimens 8 rows are indicated. Kernels included in a small lot of vegetal remains sent to the Ethnobotanical Laboratory of the University of Michigan "are more or less distorted from fire and mostly fragmentary. They vary from 6 to 9 mm. in width and from 5 to 8 mm. in depth. The typical shape is more or less crescent." (V. H. Jones, letter of February 2, 1940.) Finding of the stalk fragments and husks may be taken as proof that the plant was grown on the spot, probably on the fertile flats south of the village terrace or on small patches of mellow ground at the lower ends of the nearby side valleys.

Other cultivated food plants (Jones, op. cit.) were represented in pits 2 and 6 by remains of sunflower and pumpkin. These include "a quantity of charred seeds (achenes) of sunflower (*Helianthus annuus*). The shells or seed coats of most of these are missing and either had been removed or were burned away in charring. A few still have the seed coats intact and these complete seeds are about 9 mm. in length. Since these seeds are much larger than the seeds of any wild sunflower, they must be from cultivated sunflowers."

From pit 2 came "two small pieces of pumpkin rind, one showing the point of stem attachment. These appear to be of some small variety of pumpkin of the species *Cucurbita pepo*."

Noncultivated foodstuffs include shell and husk fragments of black walnuts (*Juglans nigra*), hickory nuts (*Carya* sp.), hazelnuts (*Corylus americana*), and pecans (*Carya illinoensis*).

To summarize, we quote again from Jones' report:

"Of the four commonly cultivated food plants of the prairie tribes—corn, beans, pumpkin (squash), and sunflowers—all except beans occur in the material from the Steed-Kisker site. It is quite likely that they were also cultivated, as they have been found in material from sites in Nebraska and elsewhere in the prairie region.

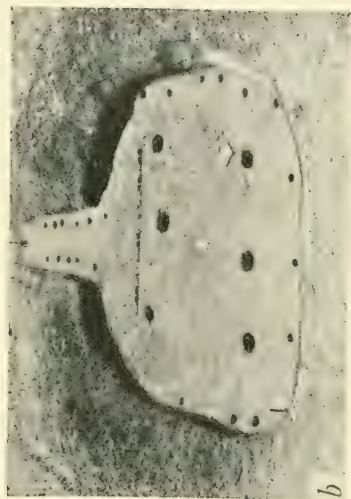
"The size and shape of the corn kernels, and the size, shape, and row number of the corncobs indicate that the corn from this site was not different in any radical way from samples in our collections obtained from prairie tribes in the past 25 years. It was typically few-rowed, with slender cobs and wide, crescent-shaped kernels.

"The pumpkin shells are similar to those of the small pumpkins (commonly called squashes) found in the prairie region in sites such as the Leary site, Wright site, and Walker-Gilmore site, and in the Ozark-Bluff Dwellings.

"The occurrence of sunflower seeds is particularly interesting, for although they were widely grown and used in the east and prairie regions the archeological record is scant. We have record of them from the Ozark-Bluff-Dwellings, Kentucky-Bluff-Shelters, the Campbell Island Village site (Fort Ancient), and from the Larson site and a site in Nebraska (Nebraska Hist. Soc. N:0:9:3:H5). The seeds from the Steed-Kisker site and the other prairie sites compare well with each other and are similar to those from the Arikara collected during the present century.

"Shells of nuts such as hickory and walnut are common in sites in eastern North America, but hazelnut and pecan are less often found. The pecan does not occur north and east of the junction of the Missouri and Mississippi Rivers to any great extent and has seldom been reported from archeological sites. All of these doubtless were used for food."

Few identifiable animal bones or bone fragments were recovered. Broken mandibles and other scraps identified as deer (*Odocoileus virginianus*), to the number of 26, were recovered from house 1, from pits 1, 2, 5, and 13, and from midden 1. Pit 1 also yielded the humerus of a lynx (*Lynx rufus*), and from pit 5 came a portion of the left maxillary of a medium-sized dog (*Canis familiaris*). Part of the jaw of a pocket gopher (*Geomys bursarius*) from the midden does not necessarily belong in the diet of the local aboriginal group; it may be from an animal that perished in its burrow or is otherwise intrusive in the site. A fragment of legbone identified as horse (*Equus caballus*), found in the fill of house 1, is pitted and cracked to



STEED-KISKER VILLAGE SITE.

a. General view from west, showing house 1 (1), midden 1 and caches (2), burial ground (3), and Platte River (4); *b.* house pit 1, entrance toward south.



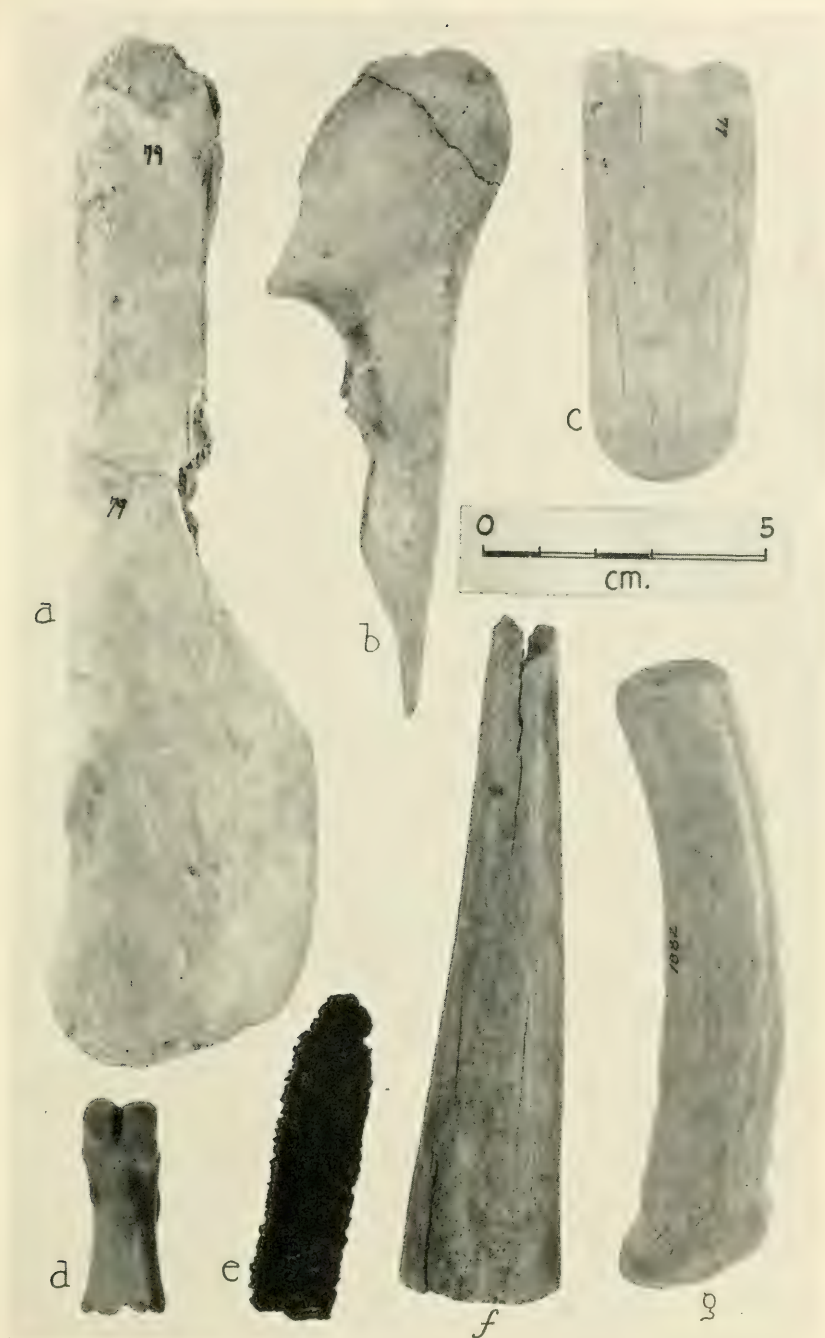
POTTERY REMAINS AND CLAY PIPE FRAGMENT, STEED-KISKER VILLAGE SITE.



INCISED RIMSHERDS FROM STEED-KISKER VILLAGE SITE.



RIMSHERDS AND EFFIGY LUGS FROM STEED-KISKER VILLAGE SITE.



ARTIFACTS OF BONE AND HORN, AND CHARRED CORNCOB, STEED-KISKER VILLAGE SITE.



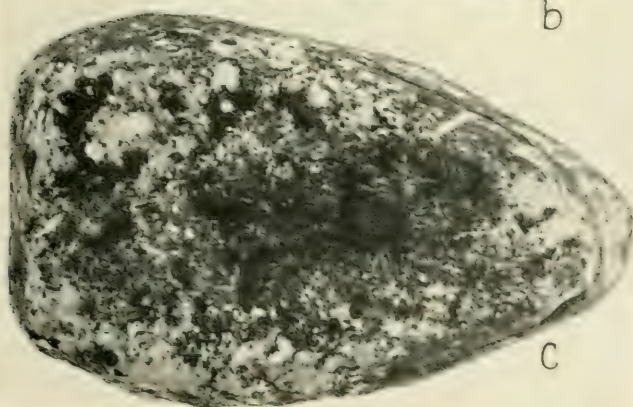
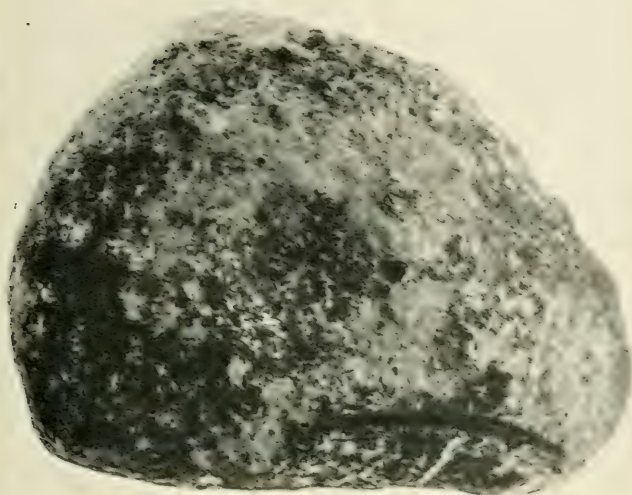
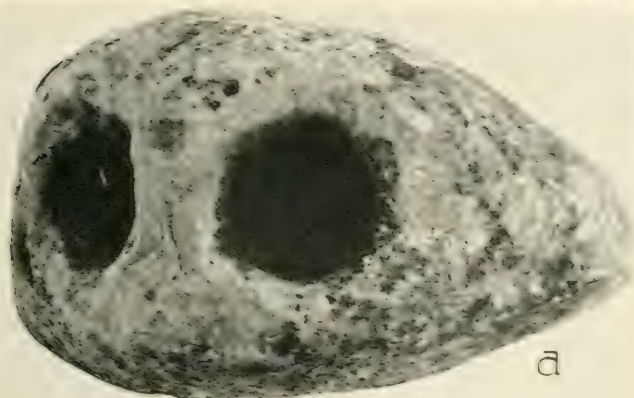
CHIPPED ARTIFACTS AND SANDSTONE PENDANT, STEED-KISKER VILLAGE SITE.



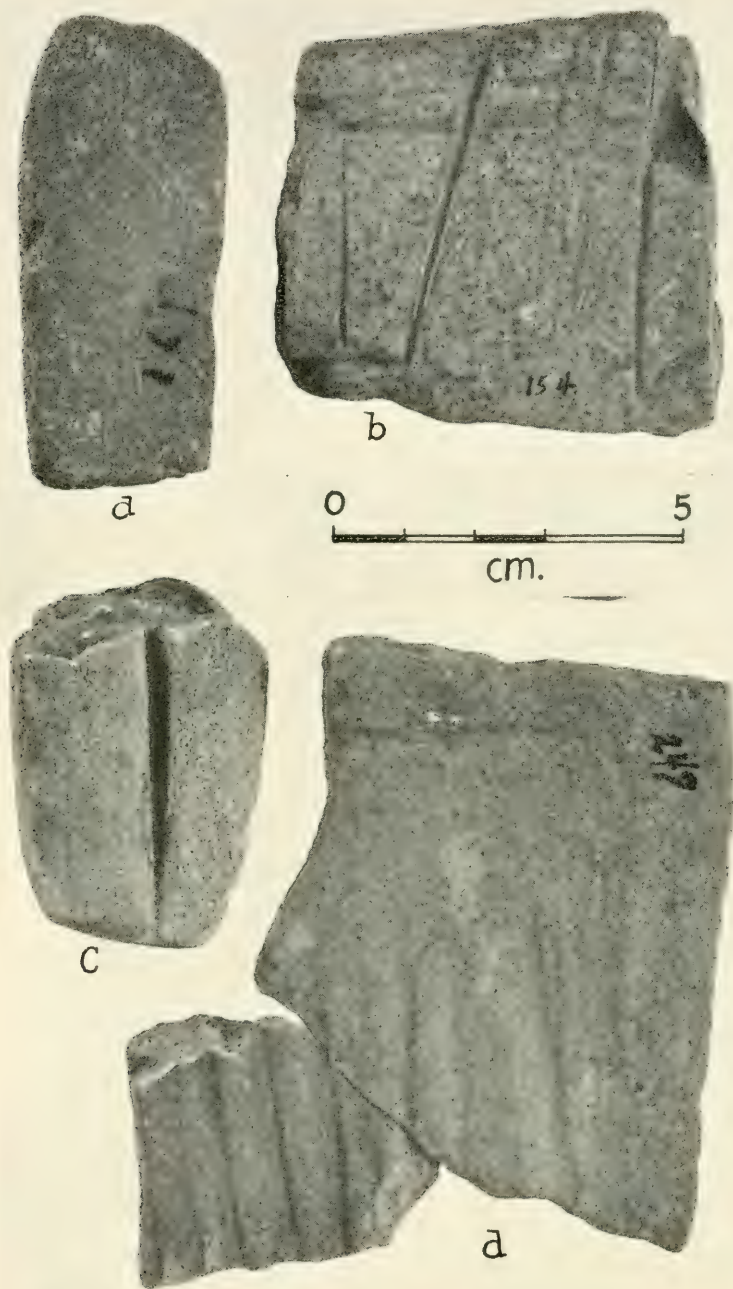
CHARRED SCRAPERS AND KNIVES, STEED-KISKER VILLAGE SITE



SHELL HOE AND GROUND STONE ARTIFACTS, STEED-KISKER VILLAGE SITE.



LIZARD OR TURTLE HEAD EFFIGY PIPE STEED-KISKER
VILLAGE SITE



SANDSTONE ABRADERS AND GROOVED TABLET, STEED-KISKER VILLAGE SITE.

a much greater degree than any of the other osseous remains. It gives the impression of having lain on the ground surface, exposed to sun, rain, and other deteriorating agencies for a long time before being covered with earth. Its general appearance is quite unlike that of the deer bones found elsewhere on the site, and this, together with the complete absence of horse trappings and other evidences of white contact, casts doubt on the inclusive nature of the specimen. While we have no record of its exact location or depth underground, I am of the opinion that it was plowed or in some other manner turned under in comparatively recent years and has no connection with the native peoples who dwelt on the terrace.

It is probably safe to infer that the deer furnished the chief supply of fresh meat and that it was both plentiful and easy to obtain. The almost complete absence of bones of birds, mammals, and other forms is rather striking in view of their relative abundance at the Renner site on Line Creek where nearly identical climatic and similar surface drainage conditions prevail. On its face, our evidence would suggest that hunting, as opposed to horticulture, was relatively less important at Steed-Kisker than at Renner, but our investigations at both sites were much too limited in scope to permit a definite judgment on this score. If the inhabitants of the Steed-Kisker site relied to any considerable extent on the products of the chase, as I believe they did, it seems improbable that they would strip their kill in the field and carry back to the village only the meat, hides, and other soft tissue. I am inclined to suspect that acidic or other soil conditions may have been responsible for the observed phenomena, so that such bones as once existed in the pits and middens have been almost totally destroyed in the years ensuing since their original deposition. Unfortunately, we took no soil samples at either the Renner or the Steed-Kisker site, and in the absence of careful chemical analyses it is obviously futile to speculate further.

Two mussel shells of local fresh-water species identified as *Amblema costata* (Rafinesque) and *Lampsilis siliquoidea* (Barnes) were found in pit 3. They may have been obtained from the Platte River, at some point above the village where the bed is less heavily silted, or from one of the smaller clear tributary creeks of the Platte or Missouri. We do not know that the natives did or did not eat the fleshy parts, but there is direct archeological evidence that crushed mussel shells were customarily mixed with the clay used in pottery making.

POTTERY

In contrast to their scarcity on the surface, potsherds were relatively abundant wherever our excavations touched pits, midden deposits, and house remains. Sherds recovered totaled 2,332, of which 279 were rim

pieces. There were no intact jars, but restoration of three from the village site has been possible up to the present. From the summary in table 7, it will be noted that 1,271 sherds (54.5 percent) came from house 1, 623 (26.7 percent) from the pits, and 290 (12.4 percent) from midden 1. Surface finds, mostly from the western part of the site, numbered 135, less than 6 percent of the total.

The pottery, as judged from our sample, differs in nearly all respects from that at the Renner site. Sherds vary considerably in color, with grays predominant; brown, buff, and orange-buff also occur. Paste is generally gray, smooth and fine in texture, and fresh breaks have a flaky rather than granular appearance. Hardness ranges from 2 to nearly 4, but few of the pieces tested exceed 3. The ware is more compact and far less readily affected by water than the Renner pottery. Surfaces, sometimes well smoothed and polished, are almost invariably pitted, and most sherds would perhaps be classed as hole-tempered. Pitting and cavities are both due, I believe, to leaching of particles of crushed shell by ground water and soil acids. The holes are always thin, flat, and angular, resembling in every respect those produced experimentally by immersing part of a thickly shell tempered sherd in dilute hydrochloric acid. On the basis of these experiments and observations, I have classed as shell-tempered the sherds containing holes as well as those in which shell fragments remain. Except in pit 8, grit tempering was comparatively scarce; it occurs, occasionally in conjunction with shell, in less than 11 percent of the total.

TABLE 7.—Summary of pottery remains from Steel-Kister village site
(Sh., shell; Gr., grit; B, body; R, rim)

Provenience	Temper		Plain		Incised		Effley lugs	Tabs	Loop handles	Cord-roughened exterior	Solid handle	Total
	Sh.	Gr.	B	R	B	R						
House 1.....	1223		949	55	155	64	2	3	16			1,271
		48	41	2	1					1		
House 2.....	13		10		1	2						13
Midden 1, surface.....	30		24	1		5						30
Midden 1.....	280		220	26	14	20			6		1	290
		10	9									
Pit 1.....	85		70	5	4	5	1					85
Pit 2.....	20		14	2	2	2						21
		1	1									
Pit 3.....	33		33									33
Pit 4.....	7		6	1								7
Pit 5.....	24		19	3	1	1						25
		1	1									
Pit 5A.....	25		20	2	3							25
Pit 6.....	5		5									5
Pit 6A.....	10		6						1	1		10
Pit 8.....	12		8	1	2							192
		180	150	16	12	2	1					
Pit 9.....	44		33	3	4	4			1			44
Pit 10.....	94		75	14	2	3			2			100
		6	4	2								
Pit 11.....	48		40		2	6						49
		1			1							
Pit 13.....	26		20	2	2	2						27
		1			1							
Surface of site.....	98		63	7	10	18	1	1	1	3		105
		7	4									
Totals.....	2,077	255	1,828	143	219	135	4	4	27	6	1	2,332

Several vessel shapes may be inferred from our sherd series. Characteristic were medium to large jars with hemispherical underbody, rounding to angular shoulder, flattish (occasionally rounding) upper-body, constricted neck, and low vertical or flaring rim with rounded undecorated lip (fig. 10, *h, i*). The largest vessel indicated in our

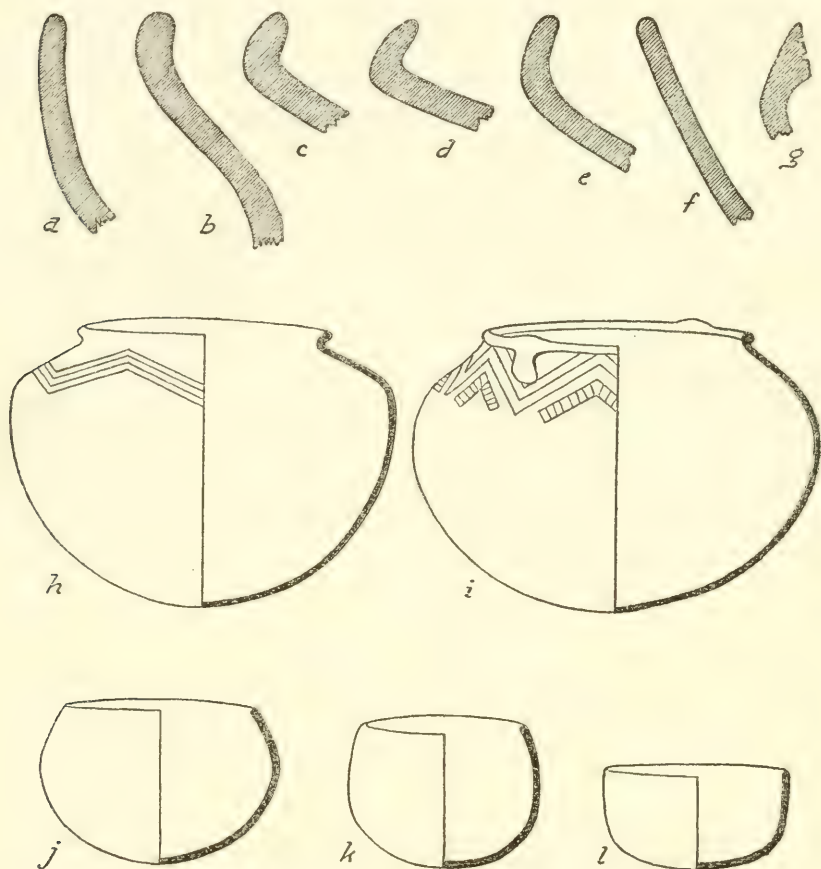


FIGURE 10.—Rim profiles and vessel shapes from Steed-Kisker village site. Interior surfaces, *a-g*, to left.

series had by projection of various arcs a neck diameter of ca. 25 cm., a maximum diameter at the shoulder of ca. 40–45 cm., and a height estimated at ca. 30 cm. More common were similarly shaped jars 15–20 cm. high and 25–30 cm. in diameter. Vessel walls averaged 3–6 mm. thick; the maximum thickness noted in the series, on the large jar alluded to above, is 10–11 mm. Loop handles, circular or flattened elliptical in cross section, are fairly common but probably did not occur on all pots; usually two were set on opposite sides of the mouth, extending from lip to upper body. Commonly they were

fastened at the lower end by insertion into a hole, the end of the handle being flattened against the inside surface of the jar. This fastening was generally so well done that the method can be seen only in fractured sherds or where the handle pulled out of the hole (pl. 24, *h*). The loop formed by the handle is rarely large enough for one's finger, and was probably intended to receive a thong or cord. Thickened tabs appear to be from jars of this type (pl. 24, *e*).

As already indicated, the lip was never ornamented, nor was the rim. Decoration was applied to the flattened upperbody between shoulder and rim. Where rimsherds are listed under the "incised" column in table 7, these are actually fragments of the upperbody to which sections of rim remain attached. All ornamentation was incised and made use of simple linear designs. The lower margin of the pattern consisted of a single or double line, undulating about the zone of greatest diameter, above which the upperbody was covered with groups of parallel lines ending at the neck. Rarely the lines at the lower margin were filled in to give a ladderlike effect. Occasionally the upperbody bears a series of three or four parallel lines either undulating continuously about the vessel, or else forming a series of adjoining inverted and concentric V- or U-shaped units. All these motifs, which recur with monotonous regularity on sherd after sherd, are shown in plate 23.

Four rimsherds from house 1 have been assembled and incorporated in a small restored pot conforming in most particulars to the above vessel shape (pl. 22, *b*). It is 8.3 cm. deep by 12.8 cm. in diameter. Both handles are intact, and a lightly incised zigzag line occurs between shoulder and neck. The surface appears to have been much darker and highly polished at one time.

Less common than loop-handled pots were small vertical walled bowls, presumably with flattened base. A restored specimen (pl. 22, *a*) from house 1 is 15 cm. across by 7.6 cm. deep. The exterior is uneven, and the inside has horizontal to oblique striations and smoothing marks. There are 23 other rimsherds that may be ascribed to several vessels of similar form and probably of about the same size. Most of these also show the marks of a smoothing tool, and none bears the slightest evidence of ornamentation. Several small modeled bird or animal effigy heads, to which portions of vertical rimsherds are still attached (pl. 24, *a, c, d*), may have been perched on bowls of this type, probably with rounded horizontal rim tabs to represent the tail on the opposite side. I should be inclined, however, to attribute these added rim features to larger deeper bowls such as the one (cf. pl. 32, *a*) taken by us from the cemetery north of the village. Human effigy heads were sometimes set on bowl rims. The one shown in plate 24, *b*, found by Shippee on the terrace northwest of midden 1,

faced inward; it has deeply punched eyes, an aquiline nose with nostrils indicated, and an open slit mouth stained red inside. From midden 1 came part of a bowl with the stump of a solid cylindrical handle set about 2.5 cm. below the lip.

A different bowl shape is shown by a specimen (pl. 22, *c*) taken from pit 5A and since restored. The bottom is slightly convex, and the bulging sides converge toward the top. Averaging less than 5 mm. in wall thickness, the piece is 12.3 cm. tall and slightly over 15 cm. in diameter. The mottled dark gray to buff exterior, now much pitted, still shows traces of a well-polished surface. There is no decoration.

Another form of jar is suggested by eight incised rim sherds (pl. 24, *f, g, i*). They are small, but the curve of the lip and probable plane of the orifice indicate that the vessel walls were drawn in toward the mouth. All are from thin-walled containers, probably of no great size, which lacked a recurved rim. Incised decoration runs to the broken edges; it consists of two to four or more horizontal lines paralleling the lip or else of a variant of the curved pair of lines bordering an area of parallel diagonals of unequal length. There is no direct clue to the shape of body or type of base, but it appears probable that the walls below the lip sloped out at a more acute angle than in the bowl described above from pit 5A. At the risk of generalizing from inadequate data, I venture the suggestion of a form that may have resembled the kiva-jar of the Southwest (Kidder, 1924, p. 62 and fig. 9*f*).

No fragments of the high-necked water-bottle type were found. There are, however, four rimsherds from two or three different vessels that evidently had a vertical neck 3 or 4 cm. high below which the body swelled outward to unknown size and shape. These were probably mostly of small size.

As regards surface finish and treatment, it may be noted that the sherds have generally been smoothed but seldom polished. An occasional piece, usually dark gray or nearly black in color, will exhibit a slight shininess. A few have thin sliplike outer layers, which tend to scale off.

Miniature pots were modeled out of clay tempered sparingly with shell or not at all. One specimen represented by about a third of the original vessel resembles the larger ones first described in having a shoulder and a low vertical rim. It is ca. 45 mm. high, with a diameter of 55–60 mm. There is also a fragment of what was probably a ladle, less than half of which is present. This was about 35–40 mm. deep, ca. 80–90 mm. wide, elliptical in shape, and of unknown length. At the end is a suggestion of a handle, comparatively thin in cross section. Surfaces are rough and uneven. The base has a flattened area, which

when the vessel was complete probably held it upright on a flat surface. It is sparingly tempered with fine shell fragments.

It is perhaps unnecessary to stress the fact that the heavy proportion of plain sherds (nearly 85 percent) is not necessarily indicative of the preponderance of plain ware over decorated pots. It has already been noted that incising occurs only on a relatively limited part of a typical pot, viz., the upperbody. Such a pot if broken would yield probably three or four times as many plain as decorated sherds. Also, it can be seen that incised rimsherds are only a trifle less common than plain. It is a safe assumption that not all pots were decorated, also that many were, but in what proportion the two groups existed cannot even be safely guessed.

Grit-tempered sherds differ somewhat in appearance from those containing shell. Tempering is of sand, less commonly of angular siliceous particles rather generously used. It is possible that the clay used contained some fine sand, since the surfaces almost invariably are gritty to the touch. Sherds are usually a dull brick red, sufficiently distinctive to be easily picked out from the more common shell-tempered fragments. Where present, decoration was by incising, identical in all details to that employed on the shell-tempered pottery. As the table shows, most of the grit-tempered pieces were from pit 8, where the usual proportions of shell to grit were reversed. Vessel forms are difficult to define, but the rims present do not appear to differ from those of the larger shouldered shell tempered jars. One large handled sherd, containing both grit and shell tempering, suggests a pear-shaped jar with low converging neck; the handle, unlike any others from the site, has its upper end well below the lip of the vessel. Except for the slightly pitted surface, it closely resembles the grit-tempered type generally. Six sherds were grit-tempered and had cord-roughened surfaces. None seems to have been from a large vessel.

Aside from receptacles, work in baked clay was of negligible amount. From pit 8 came part of a heavy pottery pipe, thickly sand-tempered, and of bent tubular type (pl. 22, *e*). The bowl cavity, burned black, was 18 mm. in diameter, and its walls were 5-9 mm. thick. Length of the bowl is unknown. The stem end has a slightly damaged tip; a hole 4 mm. in diameter and ca. 25 mm. long opens suddenly and at an obtuse angle into the rounding lower end of the bowl opening. Presumably a reed or thin wooden stem was inserted into the smaller end. There is no sign of decoration.

WORK IN ANTLER, BONE, AND SHELL

Awls, three in number, were made from mammal bone. Two complete specimens made from the ulna of the deer came out of pits 1 and 2. Each measured 116 mm. long by 35 mm. wide. Both have well-worn tips, with the unaltered coronoid process left as a handle (pl.

25, *b*) ; one has been blackened by fire. The third specimen, 71 mm. long and more slender than the foregoing, is of some unidentified slate-gray (calcined ?) bone.

A scapula, unidentified as to animal species, has been fashioned into a digging tool or knife (pl. 25, *a*). The head and spine appear to have been hacked or broken off. Evidently split lengthwise, the specimen also lacks the axillary and vertebral borders. The cutting edge, which is curved, has fine striations on the posterior surface, whereas the anterior surface is well worn. With a maximum length of 175 mm. and a width of 48 mm., the implement is much smaller than the scapula hoes or spades typical of the eastern plains. At the same time it is strong enough to have made a convenient and serviceable hand tool for working the soil or for digging pits. From the smooth character of part of the thinned edge, it might also have been used as a scraper or in cutting soft substances.

Of unknown function is the piece illustrated in plate 25, *c*. Fashioned from some heavy mammal bone, it has one broken end, while the other has been brought to a rounding sharpened edge. One side is hollowed lengthwise, evidently owing to the tubular construction of the bone used. The other, as shown, has a long narrow striated depression presumably cut out or ground by the native workmen. The surfaces, and to a degree the broken end also, have been well smoothed.

Out of midden 1 came the worked phalangeal deer bone shown in plate 25, *d*. The proximal end has been hacked off but not smoothed down. The distal extremity has a narrow notch cut deeply into the groove, separating the two lateral condyles and opening into the marrow cavity. The hole is large enough to take a small cord and suggests that the object was intended to be strung on a necklace or, perhaps, attached to some part of the clothing or costume. Part of the bone has been blackened by fire.

The incomplete right half of a deer mandible, which in my opinion has been worked (pl. 20, *f*), came from pit 4. The jawbone has been broken off 17 mm. beyond the first premolar; the fracture is rounded and worn, and adjacent surfaces show a high polish. Immediately behind the last molar is a narrow polished groove suggestive of the action of a cord or thong, which has cut into the ramus on one side and on the other into the tooth. Below the teeth both surfaces of the jawbone seem to be unusually worn and shiny, at any rate more so than is the case with the ramus. The teeth except as noted are sharp and undamaged and exhibit no certain evidences of wear or abrasion. Several dozen deer mandibles in the collections of the Division of Mammals, U. S. National Museum, have been examined, and while they present some variations none shows evidences of modifications such as have been described above. With due regard to the

contrary opinions of several zoologists, I therefore am inclined to view the specimen from the Steed-Kisker site as an artifact, though I have no suitable suggestions as to its possible function.

A broken fragment of deer rib, possibly plowed out of a refuse pit or midden, was found on the surface. One end has been cut off neatly, the other broken. The total length is 165 mm.

A small flattish fragment of polished bone from pit 2, 13 mm. long by 7.5 mm. wide, is rounded off and thinned at one end. At the other end it has been broken off across a conically drilled hole about 2 mm. in diameter. Possibly this was the butt of a needle, but any identification can only be regarded as a guess.

Pit 10 yielded 4 segments of soft cancellous bone (rib or antler ?), totaling 165 mm. in length. In cross section they are flattened elliptically, 7 mm. wide by 5 mm. thick. At one end the artifact widens gradually into a thin flat squared-off spatulate form 9 mm. wide; the other end is missing. Its use is unknown.

Scattered about in the debris of pit 1 were a few scraps of human bone. Much deteriorated, these included part of a male mandible, with the teeth and upper part of the ramus missing, and several small bits of skull. Knife scars or other evidences of human industry are absent. There is no way of determining whether these were the remains of a trophy skull, or of satisfactorily accounting otherwise for their presence in a trash pit.

Two objects of worked antler are known to be from the site. A curved cylindrical rubbing tool (pl. 25, *g*) 106 mm. long was unearthed by Mr. Shippee in a shallow pit on the terrace slope close to our pits 1 to 6A. The swelling at the base of the antler has been rubbed down but not wholly removed, and along the convex surface of the shaft traces of the rough horn exterior still remain. The ends are rounded off, and the base, as well as the surface generally, has been worn smooth. The second specimen, taken by us from pit 1, is evidently a handle (pl. 25, *f*). Tapering in form and rubbed smooth, it has a broken tip, while the larger end has been cut off square. The cancellous tissue has been removed to a depth of about 40 mm. The socket is of a size and shape that, perhaps by design, will take nearly any of the smaller planoconvex end scrapers found at the site. These, even without glue, fit snugly so as to leave the wider working end of the flint free for use. It is quite possible that the specimen was originally designed as the handle for a scraper or knife. It is 116 mm. long; at the larger socketed end it has a width of 29 mm. and a thickness of 17 mm.

The only shell artifact was a broken hoe from pit 3 (pl. 28, *a*). The shell has been identified as *Proptera alata megaptera* (Rafinesque), a fresh-water mussel native to the locality. The posterior margin has been broken or worn away to an undetermined distance, so that

the shell now measures 130 by 100 mm. An irregular hole 18 by 20 mm., placed transversely to the long axis of the shell, was broken or cut through the wall about 30 mm. from the hinge. This, presumably, was for attachment of a handle, though the exact manner in which the hafting was accomplished cannot be ascertained from the specimen.

WORK IN CHIPPED STONE

Artifacts of chipped stone from the Steed-Kisker village site are not numerous, nor do they suggest a wide range in types. Projectile points, knives, scrapers, and drill points about complete the inventory. Whereas the chipped-stone industry at the Renner site seems to have involved the use of cores and spalls, that at the Steed-Kisker location is perhaps more accurately termed a flake industry. The materials used lack the variety found on Line Creek, being virtually limited to gray and brown, rarely white, cherts. No obsidian was present.

Projectile points include both simple triangular and small notched forms. The former, 11 in number, are of modified NBa type, characteristically with slightly convex sides and a straight or moderately convex base. Of the complete specimens, the largest measures 48 by 22 mm., the smallest 27 by 16 mm. Notched forms include the following (see p. 52): NBa1, one specimen 20 by 15 mm.; NBa2, seven specimens (all from the surface) 18 to 27 mm. long; NBa3, one specimen 32 by 16 mm.; NBa4, one specimen 16 by 13 mm.; NBb2, two specimens, the larger 25 by 13 mm.; NBb-, one broken specimen 20 mm. long; SCa3, one well-made specimen with finely serrate edges 27 by 11 mm.; and four unclassifiable fragments. Thirteen of the objects enumerated were from the surface of the site. All, including the triangular forms, are much smaller than those characteristic of the Renner site.⁹ They are further distinguishable from the latter by a more skillful secondary flaking, and by their divergent shapes (see fig. 6 and compare pls. 12 and 26).

Scrapers include 33 of the small planoconvex or "snub-nose" type (pl. 27, *a-c*), of which 13 are surface finds. Most are well shaped and differ in no important detail from those commonly found on hundreds of native village and camp sites in the Great Plains. The smallest is 31 by 20 mm., whence the others range upward to a maximum in length of 52 mm. and in width of 25 mm.

Knives may be divided roughly into two main groups—(*a*) those with specialized outline and (*b*) those improvised from flakes and spalls. The first group includes two ovoid or almond-shaped specimens (pl. 27, *i*), a third that is oblong with rounded ends (pl. 27, *h*), and a 4-edged beveled variant of the so-called "Harahey"

⁹ Steed-Kisker points do not exceed 3 or 4 grams in weight; at the Renner site over 90 percent exceed 14 grams.

type (pl. 27, *g*). The last two measure 76 by 30 mm. each, the others 62 and 65 mm. long by 30 and 32 mm. wide. All have been shaped with some care and exhibit fine secondary retouching along the edges. There is no clue as to whether these types were ever provided with handles of bone, wood, or other substance. The specimen shown in plate 26, *j*, may have been a knife, an unusually large projectile point, or a blank.

Much more plentiful were knives made by retouching one, two, or all edges of large flakes and spalls. These are generally thicker and larger than the flake knives from the Renner site (cf. pl. 27, *e*, *f*, and pl. 14, *a-c*), though the latter, when retouched, show a much finer edge and more delicate workmanship. Those from Steed-Kisker are often heavy enough to have served effectively as side-scrapers or as knives. There is no fixed shape, this feature obviously depending upon the form and size of the flake used. Including fragments, some 30 or more specimens from all parts of our diggings may be assigned to this group.

Drill points, seven in number, are of various types. The largest specimen recovered (pl. 26, *g*) had an oblong form with two parallel sides, measures 62 by 22 mm., and lacks the tip. Smaller examples have evenly tapering shafts and expanded bases (pl. 26, *h*, *i*). Two small ones seem to have been reworked from projectile points (pl. 26, *k*). A sixth (pl. 26, *l*) has been made from a rude spall and has a wide base for grasping or mounting on a shaft. The remaining piece is a small chipped fragment that suggests the stem or blunted tip of a drill. These objects could have been held in the hand and used after the fashion of a bone awl for piercing skins and other soft substances. Alternatively, most or all might have been set into the ends of wooden shafts which were then rotated between the hands or by means of a bow. Archeology furnishes no certain indication as to the precise manner in which any of them were utilized.

A few other rare artifact types may be noted. The specimen shown in plate 27, *d*, has been fashioned from a thin curving spall. Most of the longer convex edge is retouched, as is the deeply concave side just above the tip. Almost all the retouching was done from the surface shown, the under side representing the smooth cleavage face. This may have been a drill or graver; it measures 60 by 25 mm. Another retouched spall, with no chipping on the under cleavage surface, has a small point at one end (pl. 26, *o*), which might have been used as a graving tool, for incising pottery, bone, or other materials. Otherwise, there are perhaps a score of heavy cores from which only coarse primary flakes have been removed. Most are fragmentary and rough, suggesting rejectage or sources of flakes used for other purposes rather than actual implements. One ovoid piece

of gray fossiliferous chert, measuring 85 by 51 by 19 mm., has worn or ground edges at the smaller end and for some distance down the sides. Possibly this was originally hafted in some way so as to leave the wider curved end free as a cutting tool.

WORK IN GROUND STONE; MISCELLANEOUS STONE OBJECTS

From the surface of the site came the incomplete ax of diabase illustrated in plate 28, *c*. Much cruder than those from the Renner site, this specimen has a square cutting edge and a shallow pecked encircling groove. There is a possibility that a second groove formerly existed at the line of fracture. The poll is missing. The surface is finely dimpled and only the extreme cutting edge has been smoothed. Elliptical in cross section, the piece measures 89 by 84 by 28 mm.

Plate 28, *b*, also shows the only other diabase implement found, which came from house 2. The specimen has been split lengthwise through most of its length, with the smaller part missing. The upper end, about 2 cm. wide, is rounded and blunt; at the opposite extremity there is a curving polished blade. The entire surface has been pecked and, in spots, polished after a fashion. In cross section the object is planoconvex, and the blade, in addition to being curved, is also hollowed out. Despite its fragmentary condition, I suspect that this specimen may be identified as a gouge or adz blade.

Reminiscent of similar objects from the Renner site is the quartzite ball from pit 8 (pl. 28, *d*). With an average diameter of 65 mm., it is asymmetrical and unsmoothed, and its purpose is conjectural.

Pipes are indicated by two specimens. Especially interesting is the large effigy pipe of chalky limestone shown in plate 29. This was apparently pecked into shape but not smoothed. Viewed in profile it suggests the head of a lizard. Eyes are represented by two shallow circular depressions ca. 28 mm. in diameter, one on each side of the specimen; the mouth is a narrow deeply incised line running low around the snout; and there is a hollow under the chin. Two rounded conoidal holes, one descending from the top and the other entering from the upper rear, meet at a slightly obtuse angle. The upper, slightly blackened, is 27 mm. across by 22 mm. deep; that from the rear, presumably fitted with a wooden or bone stem when the pipe was in use, is a little smaller and connects with the bowl through a short cylindrical opening. There are no traces of a "cake" from which the identity of the substance smoked could be determined.

From pit 10 came a thin arclike segment of gray limestone, which appears to be a fragment of the disk from a pipe possibly shaped like that shown in plate 40, *d*. One surface, probably the upper, is slightly concave; the other is convex and has a suggestion of a lip at the center

of the broken edge. This, inferentially, is where the vertical wall of the bowl originally turned outward to form the disk. The curved edge is about 7 mm. thick; the maximum width of the segment is 11 mm.; and the arc, projected, produces a circle about 55-60 mm. in diameter. All these measurements fall close to the proportions exhibited by the pipe illustrated, which, it should be noted, comes from another site.

Since conclusion of our investigations Mr. Shippee reports discovery of a pipe of another type. This was found on the surface about 200 feet north of house 1, on a slope below traces of what may have been another earthlodge site. This pipe consists of a gray sandstone block, rectangular in shape, and measuring 46 mm. in length, 32 mm. in width, and 28 mm. in thickness. The bowl, a narrow conical hole ca. 13 mm. in diameter at the top, was bored lengthwise into the block to a depth of about 23 mm., where it intersects at right angles a shorter tapering hole entering from the side. The latter was in all likelihood fitted with a stem of some perishable material.

A subcircular broken pendant of fine-grained light-red sandstone (pl. 26, *n*) was found in the rubbish above the floor of house 1. The surfaces are finely striated and, while moderately smooth, were never polished. At one side is a projection 8 mm. wide and about 10 mm. long, which has been broken off across a small perforation. The object, 3.5 mm. thick, measures 54 by 48 mm. in diameter.

Sandstone abraders in fragmentary condition occurred plentifully everywhere in our diggings. From house 1, for example, came no fewer than 50 pieces showing indubitable grinding facets or grooves. The pits and midden gave up many additional examples. Ten of those from the house (pl. 30, *a, c*) and a number of others from the site are probably reused portions of long boat-shaped shaft-smoothers of the paired type commonly found throughout the Great Plains. Most have two or more grooved surfaces, and the grooves are usually too narrow and sharp to admit an ordinary arrowshaft. They were probably used in the fashioning of needles, awls, or similar slender-pointed objects. I am of the opinion that the paired type of buffing tool was probably known at the site, though it seems curious that only reworked scraps came to our attention. Much more numerous are other blocks and slabs of sandstone, which, lacking a regular form, show a flat worn surface or a broad shallow concavity, as if larger objects, perhaps of stone, had been rubbed over them.

The thin sandstone tablet shown in plate 30, *d*, if not used as an abradar, cannot be identified as to function. It has a square corner and two straight sides but is obviously broken and incomplete on the other margins. A narrow slightly raised border, ca. 8 mm. wide, extends along the two straight edges. The surface generally is covered with shallow grooves alternating with low narrow ridges, run-

ning in parallel fashion lengthwise of the piece. Over parts of the surface, these features have been nearly or quite obliterated through wear or by other agencies. It is difficult to see why a utilitarian abrading stone should have been provided with a raised margin and a series of even parallel ridges.

Five pumice fragments vary in maximum diameter up to 9 cm. Two show definite wear facets and/or narrow grooves as though for sharpening awls and needles. As suggested elsewhere, this material was probably gathered along the Missouri and used as an abradant in working soft substances or in rubbing down animal hides.

Quartzite river boulders, which generally required no dressing, were used as hammerstones. They are usually oblong to nearly circular in shape, 65 to 95 mm. in greatest dimension, and have battered ends and sides. That they were subjected to hard usage is evident from the fact that most of the specimens seen were broken. Smaller pebbles of tough crystalline stone, with battered ends, may be termed pecking stones. Mullers are suggested by two specimens from pit 8. The larger, of diabase, is subrectangular and measures 142 by 95 by 43 mm. The long sides and one end have been pecked but not smoothed and the larger surfaces are quite uneven. Absence of worn grinding faces would argue against its use as a milling stone; it may represent a roughed out ax blank. Another specimen is of red quartzite, ovoid in form, 115 by 90 by 50 mm., and with one flat smoothed surface. This may have been used as a rubbing stone. There were no troughed or hollowed mealing slabs, either whole or fragmentary, and but one specimen (see p. 69) that might have been used as a nether millstone in grinding corn.

Lumps and small scraps of worked hematite were found in the house pit, in the midden, in most of the caches, and on the surface of the site. None shows any attempt at producing an implement, but the wear facets indicate that powder was probably ground off as needed for pigment in paint making. There was no evidence of limonite.

TEXTILE REMAINS

From pit 2, out of a layer of charred grassy matter, came several short lengths of twisted cordage. Its charred nature, together with the shortness of the pieces, renders identification of the fibers impossible. Tests made at the National Bureau of Standards indicate, however, that the fibers are of vegetal, rather than animal, origin.¹⁰ They are not cotton. The fibers appear to have been first spun into light strands, two of which were then twisted on one another, in clock-

¹⁰ Gilmore, 1919, states that in historic times the Indians of the Missouri River region utilized the following plants for cordage fibers: *Yucca glauca* Nutt.; *Ulmus fulva* Michx. (slippery elm); *Urtica gracilis* Ait. (nettle); and *Tilia americana* L. (basswood).

wise fashion, into a cord about 2 mm. in diameter (pl. 20, *e*). There are no knots, nor did we find any traces of weaving.

The Burial Ground

The hills overlooking the Steed-Kisker village site from the north thrust a sloping spur southward across the road toward house 1. About 450 yards north and slightly to the east of the house the spur levels off for a short distance before resuming its fall. The point where the slope begins again, viewed from any point farther down the ridge or from the village site, has the appearance of a small artificial mound. For this reason, some surreptitious digging had been carried on here in a search for graves. This had consisted of a T-shaped trench about 3 feet wide; the top of the T, 15 feet long, ran east and west across the peak of the "mound," with a shorter cut ca. 4 feet long extending toward the south. The results of this work could not be ascertained, but at the beginning of our investigations a few small sherds and bits of clamshell were found on and near the filled trenches. The "mound" lay 120 yards north of the half-section line road and 250 yards east by north of the Herman Kisker residence; its elevation was 875-880 feet above sea level, or about 90 feet higher than house 1. From its summit may be gained a splendid view of the lower Platte and Missouri Valleys and the bordering bluffs.

To determine the extent and nature of the "mound," if actually man-made, we drove through it two trenches intersecting at the highest point. The east-west trench was 70 feet long, the north-south trench 95 feet, and both were 5 feet wide. At the point of intersection the former was 5 feet deep, whence all the trenches became shallower toward the ends. Careful examination of the smoothed walls east, north, and west from the crossing showed only one slight color change attributable to human agency, and that relatively recent. The profile consisted of a gray topsoil about 8 inches deep, unquestionably due to modern cultivation, below which was the undisturbed light-buff or dun-colored loess of the hill itself. Local darker areas lost their distinctive appearance on drying out. Occasional bits of charcoal were seen below plow sole, but there was no proof of their introduction by man. It was concluded that the "mound" was in no sense artificial or man-made but was entirely due to erosion and natural agencies.

The north and west arms of the crossed trenches disclosed no evidence whatever of former human activity. Near the outer end of the east arm, however, about 25 feet down the slope from the summit, were encountered two poorly preserved extended skeletons. These were subsequently shown to be at the northeast end of a burial ground most of which lay on the south slope of the hill. Our south trench, from a point beginning 20 feet below the intersection and

continuing downhill for 40 feet, uncovered burial after burial lying for the most part only a few inches below plow sole. The previous tests made on the hilltop, evidently based on the assumption that graves were always placed at the highest point, had come within 15 feet of the north edge of the massed burials, though one or two isolated graves were little more than 5 feet away. Beyond a small amount of damage to some of the skeletons through deep plowing, there had evidently been no disturbance of the cemetery prior to our work.

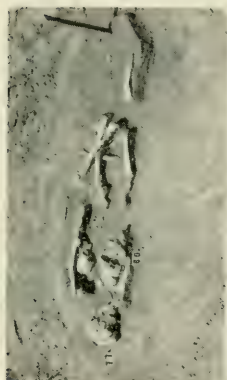
No attempt was made to clear any of the graves until a large part of the slope had been staked out in a grid pattern. This covered the area lying south of our east-west test trench and was based on a system of 5-foot squares. The west face of the original north-south test was made the baseline, beginning with square 5 at the north and extending through square 95 at the south end. The east-west cut became line 35, with units further designated as E1, E2, . . . , or W1, W2, . . . to indicate their position respectively east or west of the baseline. This system offered sufficient flexibility to allow expansion indefinitely in any direction. Location of all burials in relation to the grid used is shown in figure 11. All lay between the 874- and 879-foot contours, and none was more than 2 feet below the present ground surface. Few indeed were more than a foot deep, and it is likely that within a very few years the plow would have reached many of the skeletons.

The skeletons were generally in a very poor state of preservation, and only a small proportion of the bones could be saved for laboratory analysis. A careful count based chiefly on the number of skulls showed that a total of at least 83 individuals was represented. Of these, 51 (63 percent) had been buried in an extended supine position, 5 (6.2 percent) had been flexed wholly or partially, and 6 (7.3 percent) were bundle burials. In seven instances the remains had been reburied or otherwise disturbed in such fashion that the original position of the body could not be ascertained, and in 14 (16+ percent) the skull only was present. All phases of life from young childhood to old age were represented.

Supine extended burials usually included little except the skull and bones of the legs and arms (pl. 31, *a-c*), rarely also the pelvis and scapulae. In a few rare instances traces of the ribs and other smaller bones were noted. Orientation of the bodies varied so far as actual points of the compass were concerned but was strikingly consistent in another respect. Those in the main part of the cemetery lay with the head at the west end of the grave. In the western part, the head was nearly always at the north end, and in the northeastern part usually at the south end. In other words, the skeletons consistently lay at right angles to, that is across, the slope of the hill in such posi-



a



b



d

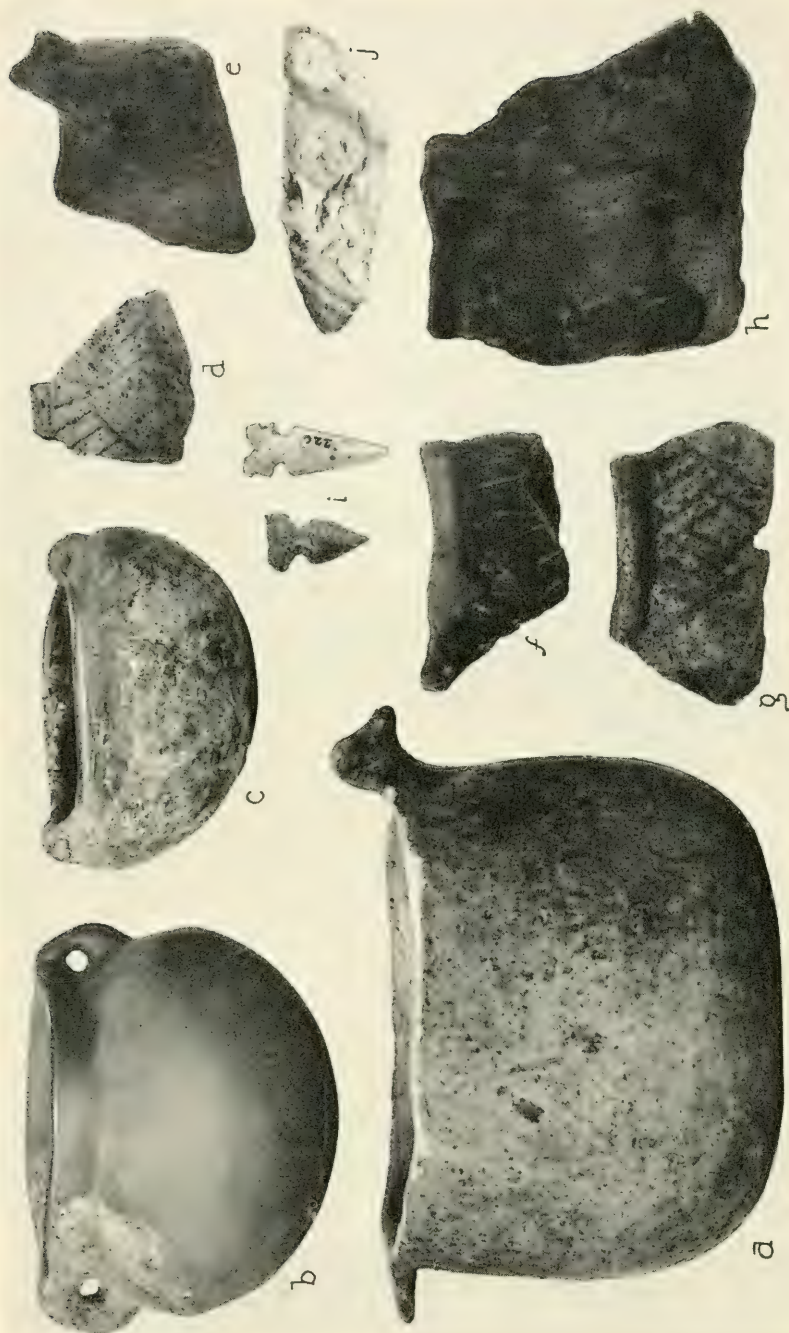


c



e

BURIALS AND BURIAL TYPES, STEED-KISKER SITE.



POTTERY AND STONE ARTIFACTS, STEED-KISKER BURIAL GROUND.

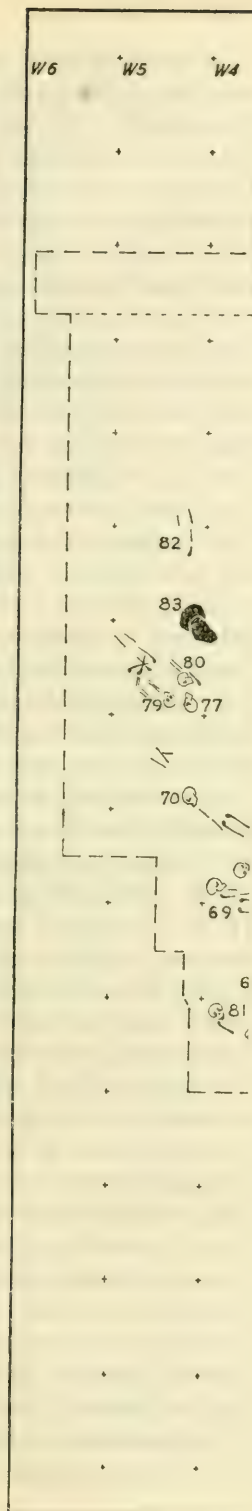


FIGURE 11.—Map sh



Figure 11. Map of the excavation site showing the location of the pottery vessels A and B. A, Pottery vessel (U.S.N.M. No. 381521); B, pottery vessel (U.S.N.M. No. 381523).

tion with reference to a common center at its summit that were they to sit up nearly all would have been facing counterclockwise around it (fig. 11). Whether this rather curious arrangement and the apparent avoidance of the hilltop itself had any ritualistic or esoteric significance is uncertain, though it is possible that the graves were arranged with reference to some ceremonial structure or feature on the point of the hill. I am inclined to believe that more practical considerations may have been involved. There is no way of determining the amount of soil washed off the hill in the 50 years or more of cultivation to which it has been subjected, but it seems reasonable to assume that the graves were originally at least 2 feet deep. A grave of this depth 6 feet long by 2 feet wide would have necessitated removal of nearly 20 percent less earth if dug across the slope than if dug parallel to it, provided the corpse had to be laid flat or nearly so. On the other hand, such a saving of labor could as easily have been effected by placing the graves on the ridge a short distance to the north. None of the possible interpretations which suggests itself is without its difficulties, and in the absence of direct evidence none can be advanced as a conclusive explanation. Perhaps native beliefs and practical considerations were both instrumental in determining position and orientation of the dead.

Flexed and semiflexed burials (respectively Nos. 67, 68, and 26, 71, 79) were scattered among the others, and there is no reason to regard them as intrusive or as representing a time markedly different from that during which the other interments were made. The term "flexed" here denotes burials where the knees form an acute angle with the axis of the trunk, with the feet drawn up against the buttocks. Semiflexed burials (pl. 31, *c*) usually have the knees at a right or obtuse angle, with the feet sometimes, but not always, against the buttocks. Burials 67 and 68 were quite fragmentary, but the former position of the various bones was determined beyond reasonable doubt. This flexed type is illustrated in plate 31, *d*.

The bundle burials, strikingly different from the majority of those with which they were surrounded, may have different connotations, but if so these cannot now be evaluated. Best preserved of all the remains were those of the bundle including Nos. 15 and 28, which were evidently those of two individuals interred together (pl. 31, *e*). The long bones of each individual were neatly stacked in two contiguous piles with the respective skulls at opposing ends of the proper pile. About 10 inches above the bones lay a limestone slab, which may have been part of a grave covering. Burial 7, also classed as a bundle, although less clearly defined than the preceding, was likewise partially covered with slabs. Nos. 41 and 42 are somewhat doubtful, possibly representing disturbed or reburials. It is barely possible

that the bundles were deposited at some other time than the rest of the burials, perhaps even by an unrelated group sojourning temporarily in the locality, but this point unfortunately could not be settled from our observations.

Of the 14 unattached skulls, the majority seem to have been relics of burials whose other parts were removed by later interments, through decay, or by other factors. Seven of these at the east edge of the burial area were closely associated with two very incomplete but probably extended skeletons. Just why these particular individuals should have suffered more from decay than others nearby is not clear. Perhaps they were in an older section of the cemetery, though there is nothing otherwise to indicate any very great lapse of time between the beginning and close of use of the hill for burying the dead.

What may signify the practice of retaining trophy heads or the skulls of deceased relatives was suggested in the case of burial 77, that of an adult male. On the right side of the chest, as if placed inside the right arm, was the badly decayed cranium of another male (?), No. 80. The incomplete partly flexed skeleton of a child, No. 79, lay under the left arm with the knees over the left leg of the adult. From the position of the bones, there can be no doubt that all these remains had been placed at the same time in a common grave (pl. 31, b.)

Stone slabs were used but sparingly in the cemetery. Their association with bone bundles has already been noted above. Two others were found as a covering for burial 83, a very young child near the west edge of the area. Three others stood partly on edge in a small pit in the southeast corner of square 45W1. No trace of bones was noted in the pit, 42 inches deep, which lay somewhat apart from the other burials. It is possible that a grave formerly existed here but had been rifled by previous excavators. A few other stones of small to medium size were noted among the burials. William Kisker informed us that in the first few years following breaking of the sod, similar slabs were occasionally plowed up and carried away. If intentionally placed in or over the graves, these must have accompanied only a small proportion of the burials. There is no reason, so far as I am aware, for believing that the entire area was so covered, or that any save an occasional grave was accompanied by the slabs. They seem never to have been used in lining the walls of graves.

That most of the burials were made in dug grave pits seems a reasonable assumption, but clear evidence of such pits was uncovered in only two instances. Burial 49 lay in a pit 5 feet long by $2\frac{1}{2}$ feet wide, filled with soil darker and containing more charcoal and debris than that surrounding it. A second skull and some loose bones in the east end of the grave comprised burial 50, perhaps disturbed by,

and re-interred with, No. 49. The second pit, of somewhat smaller dimensions, lay immediately to the east. It contained a lone skull (burial 51) near the west end, and fragments of a small incised shell-tempered pot. Both pits had been sunk to a depth of about 2 feet below the present surface. The apparent absence of similar evidence for other graves may have been due partly to their very shallow depth below plow sole, with consequent obliteration of nearly all except the bottoms of the pits, or to the remarkably uniform and homogeneous nature of the loess in which burial had taken place.

There is no means of determining with certainty the length of time encompassed by these burials. In general all belong to a single level and probably to the same general period, though several clear-cut instances of intrusion of graves by later bodies were noted. In square 70W1, for instance, burial 2 has been partly destroyed by No. 45; extra bones overlying the legs of the latter in disordered fashion seemingly belong to No. 3, which must then antedate No. 45 and perhaps also No. 2 (pl. 31, *a*). Again, in square 85 and 85W1, No. 32 lay with its skull between, and directly in contact with, the femora of No. 16, which was otherwise undisturbed. The cranium of No. 6, but nothing more, had been displaced by the legs of another burial of which the torso and other parts were entirely missing. The six burials classed as indeterminate include some of the above, as well as others probably disturbed in like manner. None of these disturbances need imply more than a few years' lapse in time.

More surprising than the instances of disturbance and intrusion just cited is the fact that the burials, on the whole, were made in relatively orderly, almost planned, fashion. Even where they are most closely grouped, the skeletons tend to lie side by side in a manner suggesting either that graves were carefully marked or else that interment took place at sufficiently frequent intervals so that surface evidences of the position of previous burials had not yet been effaced when the later corpses were brought in. This regular placement in graves that must often have touched one another was particularly well shown in the central and western portions of the burial ground (see pl. 31, *a*, and compare fig. 11).

Whether all the individuals buried at this spot were former inhabitants of the village on the terrace below is, of course, not known. Under aboriginal conditions a community of 100 to 150 persons could have lived here conveniently in 10 or 15 earth lodges, and it seems improbable that the village was much larger. We do not know the mortality rate, but at 3 percent per annum 15 to 30 years might have sufficed for accumulation of the hilltop graves. A smaller community or a lower death rate would have required a proportionately longer time. It is possible that the deceased from the village were not always placed in this particular cemetery, or conversely, that some of the

corpses represent persons who lived at a little distance from the principal settlement. Also, there remains the chance that pestilence, hunger, or warfare might have stepped up the mortality. With so many uncontrolled factors involved, it is obvious that the results of arithmetical exercises like the above can still be regarded as little more than guesses. If I were to venture a further guess, I would say that most or all of the observed hilltop burials were probably laid down in 50 years or less, and that they represent a burying place utilized by a number of small communities scattered over the nearby valley terraces.

To return from conjectures to facts, we may note that table 8 summarizes the pertinent field data concerning the burials. In the absence of specially trained observers, entries in the column headed "Sex" are probably not to be regarded as entirely trustworthy, except in those few instances where verification or correction in the laboratory has been possible. Otherwise these data furnish the basis for the generalizations set forth in the preceding pages.

TABLE 8.—*Data on burials at Steed-Kisker site. Abbreviations: Ext., extended; sup., supine; semi-fl., semiflexed; indet. or I, indeterminate; W, west; N, north; E, east; S, south; M, male; F, female; Ad, adult; Ch, child*

No.	Location (square)	Type	Orientation	Sex	Age	Condition	Artifacts and remarks
1	55E1	Bundle		M (?)	Ad	Poor	Reburial (?); 3 sherds, 2 projectile points.
2	65W2	Ext., sup	Head W, feet E	F (?)	Ad	do	Left leg, forearm, removed by bur. 45.
3	65W2	Indet		I	Ad	do	Badly disturbed; 5 sherds with Nos. 2 and 3.
4	65	Ext., sup	Head W, feet E	M	Ad	do	Very incomplete.
5	{75W1 75W2}	do	do	F	Ad	do	{Fragments of small pot associated.
6	{75W1 75W2}	do	do	I	Ad	do	{Skull disturbed by later burial.
7	55	Bundle		M	Ad	do	Crushed skull and long bones, partly rock-covered.
8	70W1	Ext., sup	Head W, feet E	M	Ad	do	Skull incomplete; many bones missing.
9	80E2	do	Head WSW, feet ENE.	M	Ad	Fair	Two sherds and flint flake.
10	75W1	Skull only		I	Ad	Poor	Badly crushed.
11	{75 75E1}	{Ext., sup	{Head WSW, feet ENE.	F (?)	Ad	do	Skull and long bones only.
12	60	do.(?)	Head W, feet E	I	Ad	do	Much disturbed; bird effigy pot 12 inches below humerus.
13	75, 80	do	do	F	Ad	Fair	Badly broken.
14	75E1	do	do	M	Ad	Poor	Much disturbed.
15	75E1	Bundle	Head at W end	M	Ad	Fair	Partly stone-covered; see No. 28 and pl. 31, e.
16	{80W1 80W2}	Ext., sup	Head W,	M	Ad	do	Skull and long bones only.

TABLE 8.—Data on burials at Steed-Kisker site. Abbreviations: *Ext.*, extended; *sup.*, supine; *semi-fl.*, semiflexed; *indet. of I.* indeterminate; *W*, west; *N*, north; *E*, east; *S*, south; *M*, male; *F*, female; *Ad*, adult; *Ch*, child—Continued

No.	Location (square)	Type	Orientation	Sex	Age	Condition	Artifacts and remarks
17	90	Ext., sup.	Head W, feet E	I	Ad	Poor	Skull and long bones, skull disturbed.
18	{85 85W1}	do	do	M	Ad	do	Skull and long bones, only.
19	85W2	Skull only			Ch	do	Against left ankle of No. 33
20	80, 85	Ext., sup.	Head W, feet E	M	Ad	Fair	Skull and long bones.
21	{85W1 85W2}	do	do	F	Ad	do	Skull, long bones, etc.
22	{55E2 60E2}	do	{Head WSW, feet ENE.	{F	Ad	do	Rimsherd near right femur.
23	55E1	(?)		I	Ad	Poor	Calvarium only.
24	55E1	Bundle (?)		I	Ad	do	N of, ca. 1 foot below, No. 23.
25	{50E2 55E2}	Ext., sup.	{Head SW, feet NE.	{I	Ad	do	{Skull crushed, overlaid by fragments of child's skull
26	75E2	Semi-fl.	Head W, feet E	I	S-Ad	do	Skull crushed, legs flexed, knees extended on back.
27	{75E2 80E2}	Ext., sup.	{Head WSW, feet ENE.	{I	Ad	do	Skull collected.
28	75E1	Bundle		M	Ad	Fair	Partly stone-covered; see No. 15 and pl. 31, e.
29	{85 85E1}	Ext., sup. (?)	{Head W, feet E	I	Ad	Poor	Skull and femur found.
30	90W1	Skull only			Ch	do	
31	90W2	Ext., sup.	Head W, feet E	I	Ad	do	Skull, long bones, left innominate.
32	80W1	do	do	F(?)	Ad	do	Skull and tibia fragments only.
33	{85W2 85W3}	do	{Head W by N, feet E.	{F	Ad	Fair	Sherd near right femur.
34	70W3	do	Head W, feet E	I	Ad	Poor	
35	{70 70W1}	do	do	I	Ad	Fair	{Skull and leg bones col- lected.
36	70W1	Skull only			Ch	Poor	8 inches above head of left femur No. 35.
37	90E1	Ext., sup.	Head SW, feet NE.	M(?)	Ad	do	Bones excessively soft.
38	70E1	do	Head W, feet E	M	Ad	Fair	Legs bowed out at knees.
39	35E4	do	Head S, feet N	F(?)	Ad	Poor	Small sherd nearby.
40	{35E5 40E5}	do	do	F	Ad	do	
41	70	Bundle		M	Ad	Fair	Bundle or disturbed re- burials.
42	70	do		F(?)	Ad	Poor	
43	70W2	Ext., sup.	Head W, feet E	F	Ad	do	
44	{65W1 65W2}	do	do	I	Ad	do	{Left arm disturbed, possi- bly by No. 2.
45	{65W1 65W2}	do	do		Ad		{Covered by odd bones from Nos. 2 and 3.
46	65W1	Skull only			Ch	do	On right elbow of No. 54.
47	56W1	do			Inf.	Fair	Between femora of No. 54.
48	60	do		F(?)	Ad	do	Skeleton disturbed by No. 49 (?).
49	65	Ext., sup.	Head W, feet E	F(?)	Ad	Poor	In oval pit with gray fill incomplete.
50	65	Secondary		I	Ad	do	Skull between knees of No. 49, long bones against North edge of pit.
51	65E1	Ext., sup.	Head W, feet E	F(?)	Ad	do	Skull and right tibia in pit, with fragments of small incised pot (pl. 32, h).

TABLE 8.—*Data on burials at Steed-Kisker site. Abbreviations: Ext., extended; sup., supine; semi-fl., semiflexed; indet. or I, indeterminate; W, west; N, north; E, east; S, south; M, male; F, female; Ad, adult; Ch, child—Continued*

No.	Location (square)	Type	Orientation	Sex	Age	Condition	Artifacts and remarks
52	65E2	Ext., Sup.	Head SW, feet NE		Ad	Poor	
53	60E1	do	Head WSW, feet ENE.		Ad	do	
54	65W1	do	Head W, feet E	M	Ad	Fair	Two children's skulls (46, 47) in grave.
55	{65E1 65E2}	do	do	M	Ad	do	{Incised handled rimsherd between knees.
56	65E2			M (?)	Ad	do	Skull and long bones, probably disturbed by No. 55.
57	60E2	do	Head WSW, feet ENE.	M	Ad	do	No. 57A (child skull) on chest; femora 19 inches long.
58	65W2	do	Head W, feet E	M (?)	Ad	do	Right leg slightly bent at knee (pl. 31, a).
59	65W3	do	do	F	Ad	do	
60	{65W3 65W4}	do	do	M	Ad	do	
61	65W4	do	do	M	Ad	do	Feet under skull of No. 59.
62	60W3	Secondary		I	Ad	do	Skull and mass of bones, association uncertain.
63	45E3	Skull only		I	Ch	Poor	No associated long bones; incomplete permanent dentition.
64	45E3	do		I	Ad	do	
65	45E3	Ext., sup.	Head S, feet N	I	Ad	do	Portions of legs found in situ.
66	45E4	Ext., sup. (?)	do	I	Ad	do	Skull and portion of left femur; pot near skull (pl. 32, c).
67	75W3	Flexed	Head W	I	Ad	do	On back, knees to left, tightly flexed.
68	70W4	do	Head NW	I	Ad	do	On back or left side, knees to left; few bones remaining.
69	65W4	Ext., sup.	Head WNW, feet ESE.	F	Ad	Fair	Stone at right of spine.
70	65W4	do	do	F(?)	Ad	Poor	Effigy lug near left femur; left foot on skull of No. 60.
71	50E2	Semiflexed		I	Ad	do	Skull disturbed, near skull of No. 25.
72	50E3	Skull only		I	Ad	do	
73	50E3	do		I	Ch	do	<i>Busycon</i> shell fragment 6 inches northwest.
74	50E3	do		I	Ad	do	
75	{45E4 50E4}	Ext., sup.	Head SW, feet NE	I	Ad	do	
76	50E4	Skull only			Ch	do	Very thin badly crushed skull, no long bones.
77	55W5	Ext., sup.	Head SE, feet NW	M(?)	Ad	do	Left arm and leg overlie No. 79.
78	75W3	do	Head W, feet E	F	Ad	Fair	Left tibia pathological.
79	55W5	Semiflexed	Head SE		Ch	Poor	On back, knees to right; see No. 77 and pl. 31, b.
80	55W5	Skull only		M(?)	Ad	do	Lay inside right humerus of No. 77; see pl. 31, b.
81	75W4	Ext., sup.	Head WNW, feet ESE.	I	Ad	do	
82	50W5	do(?)	Head S, feet N	I	Ad	do	Parts of 2 legs only, in situ.
83	{50W5 55W5}				Ch	do	Bones under rock slabs.

Artifacts from the burial ground were not numerous, but in all essential respects they closely resemble those found in the nearby village site. These resemblances, together with the proximity of cemetery to village, and the homogeneous character of the material remains from the village, definitely establish the common ethnic affiliations and contemporaneity of the habitational and burial areas.

POTTERY

Three pottery vessels, one complete and two restored, are available from the burial ground. The effigy bowl shown in plate 32, *a*, intact except for local peeling of the slip, was found about 12 inches east of stake 60 at a depth of approximately 24 inches. It has a flat base curving up into vertical walls which terminate in a rounded undecorated lip. On one side the modeled head of a bird (?) rises vertically to look away from the bowl. Directly opposite, the tail is represented by a rounding tab 4 cm. wide, which extends horizontally outward to a distance of 2 cm. The surface color is predominantly buff or dun, but a few spots have a bright orange cast, and the base is mottled with dark gray firing clouds. Where the slip has scaled off, the paste is seen to vary likewise in color. Visible inclusions consist largely or entirely of crushed shell. Exclusive of the head, the bowl is 11 cm. high and about 15 cm. in diameter, and walls average 5 mm. in thickness. The vessel stood upright 12 inches beneath the fragmentary right humerus of burial 12, but it was not possible to determine whether corpse and pot had been interred together. There was no clear evidence of a grave pit that might have held both.

An incomplete and very fragile little pot lay directly under stake 50E4, a few inches from a skull designated as burial 66. This was the easternmost of four poorly preserved calvaria lying close together and representing, possibly, the surviving vestiges of as many skeletons interred side by side. The pot is of a variable gray color, with a rough uneven surface. It has a hemispherical underbody, a rounding shoulder, sloping upperbody, and a low rounded rim (pl. 32, *c*). Two small loop handles, actually little more than horizontally pierced ears, extend from the lip to a point just above the shoulder. There are traces of a rude pattern of horizontal chevrons on the upperbody. Surface pittings remain where the shell tempering has been leached out. The vessel has a diameter of 10.2 cm., a height of 5.6 cm., and an interior orifice diameter of about 6.5 cm.

A third vessel has been reconstructed from two sherds found near burial 9 in square 80E2. One sherd lay 6 inches above the chin; the other was about the same distance from, and on a level with, the right elbow. These indicated a round-bottomed jar, shouldered, with constricted neck, vertical rim, and a rounded uneven lip (pl. 32, *b*). A

thick, round loop handle rising from the lip was attached, at its lower end, a short distance above the shoulder. Inferentially, there were originally two of these on opposite sides, as represented in the restoration. The surface, varying in color from light to dark gray, is rough and pitted, this last owing again to dissolving of angular shell particles. The dimensions, which must be regarded as approximations only, are: Diameter of body, 12.6 cm.; diameter of neck, 9.5 cm.; height, 9.2 cm.

Judged from the rimsherds and body fragments scattered among the skeletons, the above pots represent but a fraction of those that must once have been present. Incised shell-tempered rim pieces, all from separate vessels, were found in squares 55 (pl. 32, *g*), 55E1, 60E1 (pl. 32, *d*), 65E1, 65E2 (with burial 55), 65W2, and 75W1 (with burial 5). From square 60E1, furthermore, came rim segments of a small vertical-walled bowl and of a second plain shell-tempered pot with constricted orifice. Vertically placed loop handles (pl. 32, *f*, *h*) occurred on sherds from squares 55E1, 65E1, and 75W1. Part of a small vertical-sided bowl with horizontal rim tab, probably the tail from an effigy jar, accompanied burial 57 in square 60E2. A small rimsherd lacking incised ornamentation and handles, came from square 75, and a plain rimsherd with vertical loop handles was found in square 60E3. In all, there were 19 rimsherds representing not less than 15 distinct vessels. All are from vessels probably no larger than the reconstructed specimen described above from burial 9, and at least two (pl. 32, *d*, *f*) were smaller than that from burial 66, also described above.

In addition to the rimsherds there are 35 or 40 other fragments, which, lacking ornamentation or other diagnostic features, cannot be certainly linked with any of the rims. Most are shell tempered, buff or gray in color, with uneven surfaces. A few are evidently slipped. One badly weathered piece is thickened in such a way as to suggest the base or point of attachment for a solid cylindrical handle. While this interpretation is open to question, it will be recalled that one such sherd from a handled bowl was found in midden 1 of the village site. From square 55E1, near burial 24, were taken several cord-roughened sherds with a dark gray-brown paste containing angular siliceous particles. These are quite distinct from the usual burial ground pottery, as are a number of others from square 70W1. The latter are thick and undecorated, with a bright brick-red paste containing opaque white angular and rounded particles about 1-2 mm. in diameter.

The effigy lug illustrated in plate 32, *e*, was found 24 inches east of stake 65W4, near the left femur of burial 70. It suggests a bearlike animal, with a recognizable snout, ears, and tail. Vertically placed on the exterior of a rimsherd, with the head just above the lip and facing upward, it has a horizontal perforation 5 mm. in diameter between the fore and hind limbs.

So far as can be determined from the sherds, most of the mortuary pots were probably small scale replicas of the larger culinary jars used in the nearby village site. Shell tempering predominates, but grit is characteristic in a few pieces. Loop handles extending vertically from lip to upperbody, a flat upperbody often with incised decoration, rounding shoulders, low vertical or slightly flaring rims, and a rounding, apparently hemispherical, underbody, all have their counterpart in sherds typical of house 1, the refuse pits, and midden 1. Moreover, as the reader may learn for himself by comparing plate 32 with plate 23, the use of parallel lines between rim and shoulder, bordered below by an undulating line or lines, is simpler and ruder on sherds from the burial ground, but otherwise does not differ fundamentally from the motifs on pottery from house 1. Vertical walled bowls, with or without tabs or effigy tails, are likewise common to both funerary and domestic wares.

It is not altogether clear why pottery fragments should occur, sometimes singly or in groups of two and three, in such scattering fashion among the skeletons. In relatively few instances was it possible to establish even a probable association between a sherd or sherds and a given burial. Sometimes they occurred in a mass of bones or among a group of closely placed skeletons, but as often they were at a distance that cast some doubts on their ever having been in a grave. This suggested the possibility that some were merely stray surface fragments turned under by the aboriginal grave diggers, by burrowing animals, or through some other agency. However, since there was not the slightest indication otherwise of a habitation site higher up the ridge, or elsewhere within several hundred yards, it seems unlikely that such a relative abundance of cast-off sherds should have accumulated at this particular spot. Perhaps pots destined to accompany the deceased were intentionally smashed or "killed" in or over the grave. If broken over the filled grave, it is conceivable that some of the scattered pieces would have found their way underground in course of time as later pits were dug and in turn filled. Neither this nor any other suggestion, however, offers a satisfactory explanation for the isolated sherds lying remote from identified graves. I am disinclined to regard them as evidence of grave robbing, either ancient or recent, or except in certain instances as due to disturbance of contents of early burials in the preparation of later tombs. Here we may call attention again to the extreme difficulty of tracing out soil disturbances where, below plow sole, a homogeneous unstratified loessial soil occurs. The most careful scrutiny of our trench walls and excavation floors revealed no signs of root passages, animal burrows, or other local disturbed areas, and even such obviously dug spots as the graves, with two exceptions, could seldom be recognized until the skeletal parts were actually laid bare.

OTHER ARTIFACTS

Aside from pottery, three chipped flints and a shell object were recovered. A small knife (pl. 32, *j*) of gray-banded chert, measuring 60 by 20 mm., has retouched edges beveled from one surface. Two small arrowpoints were associated with burial 1 in square 55E1, along with several typical potsherds. The larger, of NBA3 type, is 28 by 10 mm.; the smaller, NBb1, is 20 by 11 mm. Both are shown in plate 32, *i*. Near the center of square 50E3, between skulls 72 and 73, was found a short pin-shaped object of shell, 25 mm. long with a maximum head diameter of 20 mm. This was fashioned from the upper end of the columella of a small *Busycon perversum* (Lea), a marine shell native to the Gulf coast. Aside from the fact that the piece has been worked there is nothing to indicate the manner in which it was used.

OTHER VILLAGE SITES

During the four months spent in actual field work in Platte and Clay Counties insufficient time was available for a thorough survey of the village and burial sites with which the Kansas City area evidently abounds. The reports of many visitors to our diggings, as well as conversations with various nonprofessional collectors, clearly indicate that an intensive and sustained reconnaissance would be eminently worth while. Our own investigations brought to light the remains of at least two distinct cultural manifestations, and further research, in addition to much needed supplementary information on these, would in all probability reveal vestiges of other divergent archeological complexes. Since the present paper makes no attempt at a complete reconstruction or at anything more than a partial outline of local prehistory, the remarks that follow will relate only to sites at which, to judge from surface examination, remains similar to those under consideration may be expected. The exact location of each is on record in the United States National Museum, but pending the time when a responsible investigator can undertake proper systematic excavations, it has been deemed inadvisable to indicate the situation of the larger and more promising ones on the key map in this report. The writer is indebted, among others, particularly to J. M. Shippee, Ralph Henneman, and H. M. Trowbridge for invaluable assistance in the examination of these sites.

Five or 6 miles west of the Renner site, on a small unnamed creek about a mile south of the Missouri River, Mr. Trowbridge has been exploring a village site that yields remains closely similar to those found by us at the mouth of Line Creek. Situated on a small well-drained and sheltered terrace, the site covers 3 or 4 acres. The artifact-bearing stratum, 12-18 inches thick and very dark in color, is

overlain with soils washed down from the hillside to the east. The overburden attains a thickness of about 2 feet along the deeply cut creek bank, but farther back artifacts are sometimes found on the tilled present surface. It is possible that the old village level, sloping upward along the foot of the hills, has been partially laid bare along its fringes by renewed erosion subsequent to the deposition that buried most of the ancient living surface. Pits, apparently similar to those at the Renner site, occur here, but nothing suggestive of post molds, hearths, or house pits has been reported. Lumps of burnt clay and quantities of animal refuse, especially deer bones, are present; maize, beans, or squash have not been encountered.

From several brief examinations of the Trowbridge collection it is evident that grit-tempered wares with plain, rocker-roughened, rouletted (rare), and cord-roughened surfaces predominate. A large jar, partly restored, is of the amphora type represented, in form, by figure 4, *j*, and plate 4. Other shapes are not known to me, though miniatures occur. Simple dentate and compound stamp impressions are present, probably in greater proportion than at Renner's, and embossed nodes, either alone or with cord-wrapped stick or stamp impressions above, are found on a number of rimsherds. In form and decorative treatment rims run the gamut of types represented at Renner's, though I have the impression that cross-hatched rims are rather less common, relatively speaking. Body ornamentation included the use of alternate plain and stamped zones separated by incised lines or grooves. The Trowbridge material includes many, perhaps most, of the pottery elements described for the Renner site, and careful study would doubtless reveal others not recorded at the latter. It is my feeling that a thorough analysis would show noteworthy dissimilarities as regards the relative importance of certain elements at these two sites, but in how far these probable differences reflect individual, familial, or village styles, or alternatively, are due to temporal factors, I am unable to suggest at this time.

Stonework includes a rather varied assortment of chipped forms, among them numerous heavy-stemmed arrowpoints and lesser quantities of end scrapers, flake knives, small disks, drill points, and knives. There is one flake of translucent obsidian with notches at the end. Unlike the Renner, the Trowbridge site has yielded no grooved axes and, I believe, but one ground celt, of hematite. A dressed sandstone slab 5.5 cm. wide by 7 cm. long has one curved end; the other is broken off through a well-centered biconical perforation. This was probably a gorget, of unknown length. A thin, flat, elliptical pebble, well rubbed and measuring 17 by 21 mm., has a biconical hole 1 mm. in diameter at one end, doubtless for suspension as an ornament. Sandstone abraders, as well as worn and grooved pumice fragments, are found.

In bone and antler there are socketed conical projectile points, cylindrical rubbing tools, and flakers. Bone beaming tools of two-handed type include both split metapodials and the innominate bones of the deer. Punches of deer ulna and smaller awls are present, though I am not certain whether eyeleted needles occur. Two incomplete turtle carapaces had evidently been worked into bowls or dippers.

As at the Renner site, there are crude clay figurines, including effigies of birds and one suggesting a human bust. A very small nipplelike piece of clay recalls the larger and better made clay and limestone cones at Line Creek. Noteworthy because of its apparent uniqueness in collections from this locality is the broken bit from an unfinished clay pipe. Slightly curving along the longer axis, it is planoconvex to elliptical in cross section. The finished end, 2 cm. wide by 0.6 cm. thick, has a shallow round hole evidently the start of a stem perforation; the broken end is 1.4 by 3 cm. Surfaces are well smoothed, and the piece is quite hard. There is no clue to the bowl or to the length of the original pipe blank, but the bit fragment resembles so closely the same part in the familiar monitor or platform pipe, and its clay variant at Marksville, La., as to leave scant doubt that it is correctly identified.

Equal or greater interest attaches to the specimen figured in plate 20, *d*. Shaped much like the head and upper end of an ordinary straight pin, it has been fashioned out of deerhorn from a spike buck. The base of the horn, where the "burr" normally occurs, has been ground off about the edges and is convex in profile. Above the base the specimen contracts rapidly in size, tapering out to a round stem carved from the shaft of the horn and broken at the end. The head of the "pin" is slightly elliptical, 24 by 22 mm. across; the periphery, thin and sharpish, has 19 small, unevenly spaced, V-shaped notches. At the broken end the stem is 6 mm. in diameter, and the overall length of the object is about 3.5 cm. The stem is not attached at the center of the head, nor does it rise at a right angle with the plane of the notched edge, because of the direction followed by the growing horn. All the surfaces have been smoothed down, and the notched edge is well worn.

In a short paper previously published, it was suggested, on the basis of laboratory experiments, that this bone instrument was a roulette used for marking pottery (Wedel and Trowbridge, 1940). The notched head, when rolled in plastic clay, leaves a V-shaped line interrupted by low transverse ridges from 1½–3 mm. apart. Owing to its eccentric placement on the handle, moreover, the head rolls most easily in an arc 25–35 mm. long. By rolling or rocking the object back and forth continuously, each time at a slightly different angle, a band of "dentate rocker" impressions is produced that duplicates the

markings actually found on a small proportion of sherds from the Trowbridge site. The smooth or "edentate rocker" impressions, which decidedly predominate over the dentate style at both Trowbridge and Renner, could have been made with equal ease by using such a roulette from which the edge notches had been omitted. Bearing in mind the complete absence of stamps or other pottery-marking implements from our collections at the Renner site, I nevertheless am of the opinion that the sherds from there that I have previously designated as rocker-marked may well have been worked over with an unnotched roulette used with a rocking motion. The particular roulette in question, when operated with the right hand, gives vertical curves convex to the left, whereas the rocker marks on sherds and pots at Renner and Trowbridge are almost always, if not indeed invariably, convex to the right. Unless it be assumed that the potters were all left-handed, this would imply that they either inverted or laid the pots on their sides in applying the ornamentation, or else that they leaned over the upright vessel and worked on the far side.

Within the corporate limits of Kansas City, Kans., traces of at least two village sites apparently related to Trowbridge and Renner have been reported. One is at the north edge of Klam Park (fig. 1, site 2) where Mr. Trowbridge has collected pottery fragments and a few flints. Rocker markings, dentate stamp impressions, and cross-hatched rimsherds, together with heavy stemmed projectile points, are present. The second location (fig. 1, site 3) is on a small garden plot south of Woodlawn Cemetery, and is crossed by Ninth Street, Troup Avenue, and Chelsea Trafficway. At one time there must have been a terrace of several acres here, but grading activities for the streets and for a nearby electric rail line have all but obliterated the former contours. Jersey Creek flows along the southwest edge. On the remaining terrace remnant and the slope above may be found grit-tempered sherds identical in all respects to those from Renner's, along with an occasional large-stemmed arrowpoint. Flint rejectage and bits of burned clay likewise occur. This may be the site reported by Serviss (1883, p. 528), whose remarks led directly to its reexamination in 1938. I quote:

About two years ago I discovered on the farm of J. L. Stockton, 1 mile northwest of this city [Wyandotte City, since incorporated in Kansas City, Kans.], remains of an aboriginal workshop or village. It is located on a small stream, called Jersey Creek, and near a large spring. It covers an area of about 2 acres. The soil is sandy, and to the depth of 2 feet is a complete mixture of flakes of flint, ashes, bones (both animal and human), fragments of ornamented pottery, broken and unfinished stone implements of nearly every description. The fragments of pottery are the most numerous; there are three kinds as to color: viz, black, brown, and red, composed of a mixture of clay, sand, and pounded shells. The variety of the combinations of lines and dots is inexhaustible. I have never found two pieces alike.

Judging from the degrees of curvature of the fragments, the original vessels were mostly globular, and would hold from one-half pint to one quart. I found a very small vessel, containing powdered bone or lime; it was globular in shape, would hold about one gill, and was profusely ornamented. There are no deposits of flint and other stone valuable for arrow-making, &c., in this vicinity. The axes, celts, skin-dressers, and balls are all made of porphyry, and the arrow-heads of flint.

Sherds containing "pounded shells" have not been found recently at the Jersey Creek site, and the allusion to "combinations of lines and dots," though not wholly inapplicable to wares such as those at Renner and Trowbridge, sounds suspiciously like a thumbnail description of Oneota pottery. Shippee and Trowbridge have since sought verification of this location through county land records, and Trowbridge finds (Shippee letter of Mar. 30, 1940) that J. L. Stockton did own this particular tract at the time Serviss reported the site.

In the communication cited above, Serviss further gives brief notice of four mounds on a ridge near Edwardsville in southern Wyandotte County. No trace of these was visible in the spring of 1938,¹¹ but on a small apparently unnamed creek 150 yards to the north and about a quarter of a mile north of town, were found evidences of a small village or camp site (fig. 1, site 4). This would be at or near "a very large spring about 200 yards northeast. . . ." of the mounds. The site is well sheltered, but portions of it are subject to overflow from the stream at time of heavy rain. Roy Williamson, owner, who lives across the road on the site of an old Delaware Indian mission, stated that the Delawares formerly lived on these bottoms, which would probably account for the occasional finding of glass beads and other trade articles. At the same time, I found thick cord-roughened and plain grit-tempered sherds, part of a cross-hatched rim with punched bosses on the exterior, lumps of burnt clay, and chipped flints of prehistoric types. Among the latter was a long narrow leaf-shaped form with squared base, similar to specimens that Shippee reports as common on the bluffs along the Missouri in Clay County, Mo. Mr. Williamson showed me a large collection of heavy-stemmed arrowpoints, chipped knives and scrapers, and several $\frac{3}{4}$ -grooved axes, which he had plowed up on this flat. On the higher portions, moreover, there were several dark circular spots, which I believe were refuse pits. The Delawares may well have dwelt in this hollow, but I have no doubt they were preceded in precontact times by a group closely related to the peoples who lived at the Renner site.

Another small camp seems to have been located at the Mussett site (fig. 1, site 1), on the left bank of Plum Creek north of Leavenworth.

¹¹ Three of these mounds were opened about 1896 by Barnum Brown, then a student at the University of Kansas. Brown (personal communication, February 24, 1940) states that they were entirely of earth and stood to a height of about 6 feet. He believes they were certainly artificial, but he found no trace of bones or artifacts in any of the elevations.

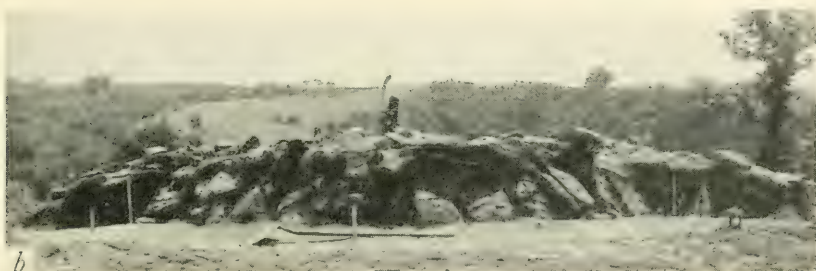
Plum Creek is a branch of Salt Creek, which empties into the Missouri about $1\frac{1}{2}$ miles southeast of the site. Here there are broad terraces, but camp litter was found only along the edges immediately touching the creek. Flint chips, large stemmed arrowpoints, scrapers, and the like occurred in some quantity, and the owner showed us a $\frac{3}{4}$ -grooved ax and cross-hatched channeled rimsherds previously plowed up. On the basis of our very cursory examination, I am not convinced that extended excavation would be warranted; the site appears to have been a transient or hunting camp rather than a village of any prolonged occupancy.

Recrossing the Missouri, we mention briefly the Deister site on Line Creek, about 2 miles above the Renner. Sherds and flints in the Shippee collection, so far as they go, indicate a close similarity to the materials above described from Renner and leave little doubt that the two communities were inhabited by kindred groups. Recently I have been informed by Shippee (letter of February 19, 1940) of the existence of "the remains of three stone vaults on a secondary ridge 200 yards northwest and across the creek from the Deister site." We shall discuss in another place the possible significance of this and other instances where groups of vault mounds occur in proximity to certain village sites.

Three promising village sites lie down river from Kansas City. The first or uppermost occupies a terrace of 2 or 3 acres where a short, unnamed, spring-fed creek descends out of the bluffs. Grit-tempered sherds are plentiful. Channeled rims bearing cross-hatching (or sometimes rocker marks) and punctates are common; sometimes the punctates are replaced by bosses punched out from the interior. Many rimsherds, in profile like figure 4, *a*, *b*, have vertical or diagonal dentate stamp or cord-wrapped stick impressions between the lip and bosses. In several, heavy horizontal rouletted or dentate stamp marks occur below, or otherwise in combination with, the bosses; or the bosses are omitted, and the notched roulette marks run horizontally below a zone of cord-wrapped stick imprints on the lip exterior. Body sherds are mostly plain, but there are others whose exterior bears cord-roughening or else bands of dentate or edentate rocker marks. Along with this pottery have been found lumps of hematite with grinding facets, mullers, hammerstones, celts, grooved axes, scrapers, and chipped knives. Arrowheads, mostly large and stemmed, include forms with contracting stem and others with corner or side notches. Our small sample includes an ovoid coarsely chipped flint 13.3 by 5 by 3 cm., with the broad end highly polished to a distance of at least 3 cm. from the edge; possibly this was a hoe or digging tool. Sandstone abraders and pumice fragments are present. Neither bone refuse nor artifacts have yet been found.

Aside from the foregoing, all of which points to a material culture inventory slightly variant from, but basically related to, that at Renner, there are traces of another complex here. In our sample there are two thin, smooth, shell-tempered sherds quite unlike the more common fragments as just described. Shippee has found several large pieces of a globular vessel with flattish upperbody, recurved rim, and a flat loop handle 2 inches wide running from lip to upperbody. A smaller rim fragment has a similarly placed but narrower vertical loop handle. There are also several incised sherds reminiscent of those at Steed-Kisker. Twenty-one "hard dark gray, grit-tempered finely cord-marked sherds . . . have been partly smoothed over and would fit in nicely with Upper Republican sherds. Two multiple-grooved [paired?] sandstone abraders, a few end scrapers, and numerous triangular (both notched and unnotched) points" have been found. Most of this material was found a short distance above the terrace proper on a narrow shelf where gully erosion has exposed charcoal, burnt wattling clay, and other traces suggesting a former earthlodge site at a depth of about 30 inches. Certain of the sherds are difficult to differentiate from Nebraska Culture wares found higher up the Missouri. It would seem likely that there were two separate prehistoric occupations at this spot—one by a group related to the peoples at the Renner site, the other by peoples akin to those at the Steed-Kisker site. There may be stratification, but whether or not there is, and regardless of the number of complexes actually represented, the site clearly merits further investigation on a systematic plan. Mounds or graves are not known to occur in the immediate locality.

A few miles farther down river, on a gentle slope between the bluffs and the bottoms, is the second site. A small creek on the south, together with a good spring nearby, provided a plentiful supply of potable water in the old days. The site appears to cover 3 or 4 acres. Though the ground was not in good condition for surface collecting at time of my visit, Shippee and Henneman had a number of sherds and other specimens. Here again plain grit-tempered pieces predominate, but a high proportion of rims are cross-hatched with a row of punctates immediately below. Rocker impressions occur on both rim and body, and there are several instances of the dentate stamp or roulette. A few pieces show a plain neck with decoration above and below, and on one there is a broad shallow groove separating a plain from a rocker-roughened surface. There are lumps of burnt clay, none of which show grass or twig imprints. Arrowpoints are of the types found at the preceding site, and there is a considerable variety of other chipped implements. A coarsely serrate point closely resembles that from the Renner site shown in plate 12, *o*. Polished celts are present. There is sufficient room for a village nearly



VIEWS AT PEARL BRANCH MOUND GROUP.

- a*, South ridge bearing stone chambered mounds, Missouri River in background; *b*, Nolan mound C from north, with earth and rock mantle removed to show slabs buttressing chamber wall; *c*, Nolan mound C from north, showing square burial chamber with south entrance, large buttressing slabs, and outer sheath of earth and stones.



EXCAVATION OF PEARL MOUND C.
a, From south; *b*, from north; *c*, burial chamber; *d*, dismembered burials.

as large as that at Renner, and it is quite probable that detailed investigation would show an occupancy of some permanence. Four low earth mounds, each 40 to 60 feet across and possibly artificial, lie on the ridge top north of this site.

Our last site, barring several on the lower part of Fishing River that cannot now be satisfactorily characterized, is very small. It occupies a small flat, elevated about 30 feet above the bottoms, between two deep narrow wooded draws. Though it covers less than an acre, with room for scarcely more than two or three lodges, sherds are surprisingly numerous. In all respects they tally with those from the preceding sites. Rims include plain, cross-hatched and punctate, and rocker marked with punctates. Body sherds are mostly plain, but with a few examples of rocker roughening and dentate stamp. Our sample includes no flints, but these would appear to be of the types usually associated locally with these wares. The site, I think, can be linked with some assurance with the Renner complex. On the ridge above, several hundred yards distant, are a few low mounds, which were apparently built in part of stone. One has been looted, and bits of human bone were still lying about. I am unable to say whether these were enclosures of the type opened by us at Pearl Branch, or merely piled up stone cairns covered with a mantle of earth.

MOUND EXCAVATIONS

Numerous mounds are to be found on many of the bluffs and hill-tops of the Missouri in the great bend region, which is, in a general sense, near the western limit of the mound building area of the Mississippi-Ohio Valleys. Westward, the custom of raising special structures over the remains of the deceased can be traced for about 100 miles more, i. e., slightly beyond the Blue River in Kansas. Few if any of the mounds now known in the trans-Missouri plains of Kansas and Nebraska attain the size and relative prominence of some of those in northern Missouri, and only rarely do they contain any traces of special enclosures or other structures. In general, so little is known of mounds in this area that even the above statements are made with recognition of the possibility that significant exceptions may yet come to light.

The mounds that came under our immediate observation in the course of field work in Platte County may be roughly divided into two types. Those of the first type contain rectangular to circular walled stone burial chambers covered with earth. Frequently, perhaps characteristically, they occur in groups of three to a dozen or more. A detailed discussion of their distribution and possible relationships will be presented later, but it may be pointed out here that

their presence in the Kansas City area has been recorded in the literature since 1877. The type has not been reported north of St. Joseph, approximately 80 miles upriver from Kansas City, but is common downstream.

Mounds of the second type, which undoubtedly includes several as yet undefined variants, are composed largely or entirely of earth. None of these was entirely worked out by our party, but artifacts from two and short summaries of previously unpublished investigations in two others may afford some understanding of their nature as revealed to date.

Stone-Chambered Mounds

THE PEARL BRANCH GROUP

Pearl Branch is a short, normally dry watercourse draining onto the Missouri bottoms 1.3 miles north of Waldron, 8.2 miles northwest of Parkville, and 2.7 miles south of Farley. The valley is scarcely a mile long, but at its lower end it has a depth of nearly 200 feet and a narrow rock-floored creek bed. The winding ridges to the north and south are about a third of a mile apart, giving the valley a broadly V-shaped profile. Habitable flats large enough for village sites are absent, but a few small seeps of water might once have induced single families to settle here and there beside the creek channel. The bordering slopes throughout the lower third of the valley are mostly too steep for modern cultivation and retain a considerable stand of timber. In spite of the presence of no less than six farm residences, small game still inhabits the wooded ridges and slopes. Our slumbers were disturbed on several occasions by coyotes, and the tracks of raccoon, opossum, and other fur-bearers were identified about the damp margins of the water holes.

The archeological remains consist principally of burial mounds (fig. 12). Nine of these are strung along the top of the ridge (pl. 33, *a*) south of the valley. A property line divides the series into two groups. On the west, in part looking out over the valley of the Missouri, are five mounds belonging to O. Pearl; to the east, where the ridge narrows slightly, are four on the property of Ray Nolan. Across the valley, on land owned by Mrs. C. W. Babcock, are two other mounds, both on the summit of a ridge sloping sharply west to the Missouri bottoms and more gently south and east to Pearl Branch. What may formerly have been still another mound lay about 200 yards north of Babcock Mound A, some distance beyond the limits of the area included in our map. Human remains were found at this spot by our party, but the mound, if one ever existed, has been completely reduced by cultivation.

Like nearly all other mounds in the Kansas City area and for some distance above and below on the Missouri, these had suffered extensively at the hands of vandals obsessed with nothing more than a lust

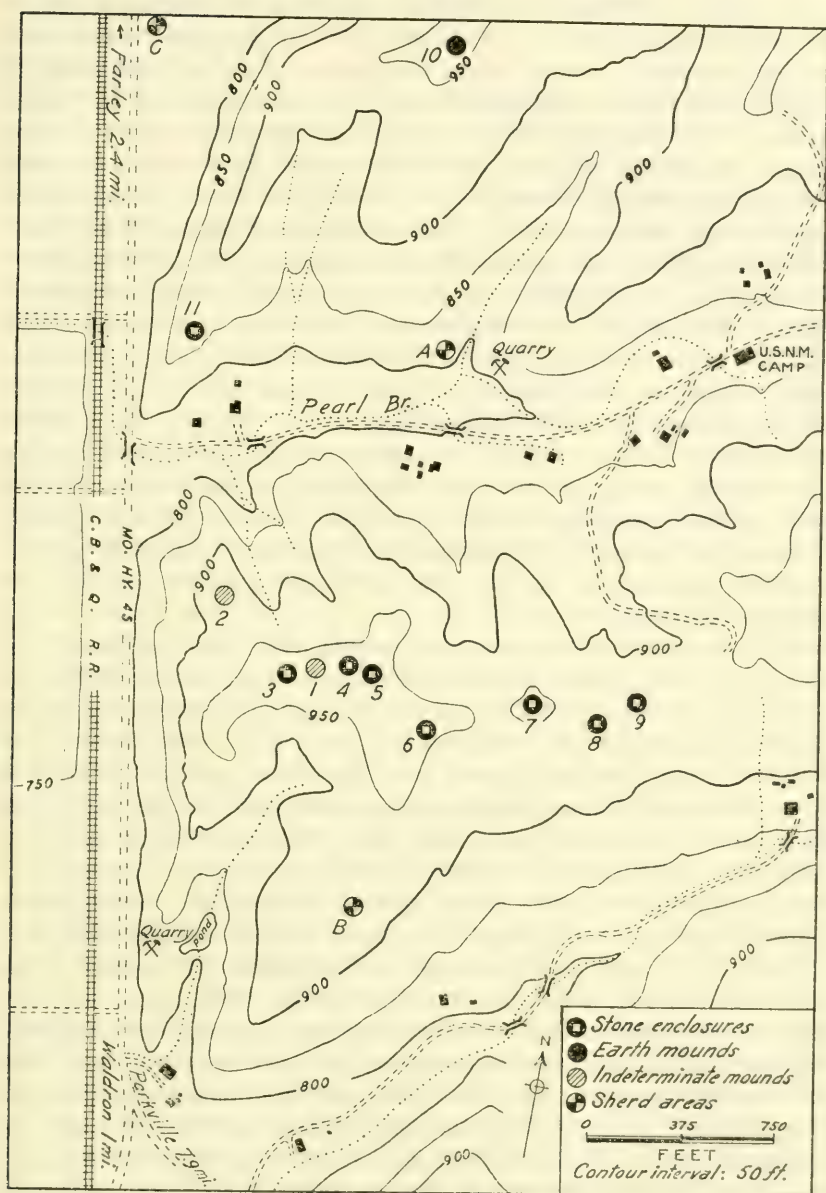


FIGURE 12.—Contour map showing location of Pearl Branch mounds, near Waldron Mo.: Nos. 1-5, Pearl A-E; 6-9, Nolan A-D; 10-11, Babcock A and B. A, B, C, sherd areas (see p. 129). Solid rectangles indicate modern buildings.

for relics. Not one had escaped partial despoliation; several had been more or less thoroughly plundered; and two or three had been so completely torn apart that even the original size, dimensions, and position of stones were no longer obtainable. For the most part this digging had been done surreptitiously and in defiance of the stated wishes of the property owners. Since the mounds were all of comparatively limited size and depth, any one of them could have been entirely cleared and demolished in one day by two or three persons seeking only relics or skulls. This circumstance makes their protection well-nigh impossible even by well-intentioned land owners. What information as to structural details was secured by the excavators, if indeed such considerations ever occurred to them, is not known; so far as I am aware, no photographs, sketches, or notes of any sort were kept. Accurate interpretation of archeological remains is almost always difficult even under optimum conditions. When to this is added the mischief done through partial effacement of such evidence as has survived the passage of time, the obstacles to reconstruction of native customs and practices become formidable indeed. In the present instance, we reopened and examined every mound in the three groups, and such conclusions as have been advanced elsewhere rest on the evidence salvaged from all.

In the ensuing description, the mounds have been arbitrarily divided into three groups according to the property on which they lie. Within each such group, the mounds have been further designated individually by letters—thus Pearl A, B, C, D, and E, Nolan A, B, C, and D, and Babcock A and B. Their exact position relative to one another and to topographic and other features may be understood by reference to the key map (fig. 12). Exact elevations above sea level of their bases are as follows: Pearl A, 965 feet; Pearl B, 932; Pearl C, 966; Pearl D, 964; Pearl E, 962; Nolan A, 967; Nolan B, 957; Nolan C, 956; Nolan D, 948; Babcock A, 974; Babcock B, 872.

Pearl A.—Of the entire group of mounds at Pearl Branch, this (fig. 12, 1) alone seems to have escaped the ravages of the pothunter until shortly before our arrival. When first seen and reported to me by Shippee, it was about 25 feet across and not over 18 inches high. Bits of burnt red clay and some stones were scattered over the surface, but the evidences were generally very slight by comparison with the neighboring mounds. Unfortunately its existence came to the notice of relic collectors said to live in Leavenworth, Kans., and during the spring of 1938 it was very considerably damaged by these individuals in an effort to anticipate the investigations of the National Museum. When we arrived on the scene, many large and small pieces of burnt bricklike clay, limestone slabs, and occasional bits of calcined human bone littered the surface. Subsequent examination showed that an area not less than 10 feet across had been dug to a maximum depth

of about 4 feet and then refilled. This vandalism aside from its malicious motives is the more regrettable since the mound was in several respects unique among all those examined by us or heretofore reported for the region.

To determine the limits of the mound proper and any special structures it might contain, four trenches were started on opposite sides some distance from its apparent margins so as to intersect at or near the supposed center. Each of these cuts, about 12 inches deep, soon ran into unmoved flat-lying slabs, whereupon all earth was cleared away from the angles between the trenches. The area thus defined was approximately circular and about 15-16 feet across. Removal of 6 or 8 inches of gray soil further disclosed a layer of large slabs forming an uneven pavement 1 to 3 feet wide completely encircling the old diggings. I am inclined to suspect that this layer was once continuous over the entire area, since numerous large slabs piled into the central dug portion had obviously been thrown in very recently; presumably they formerly covered the looted section. At the outer edge of the area the slabs rested directly on the yellowish subsoil, but those nearer the center were underlain by a varying thickness of gray mixed dirt. Moreover, the outermost stones were of the same natural gray-white color as the limestone ledges in the ravines 200 yards distant, the probable source of the slabs, whereas toward the center many had been turned reddish through exposure to fire.

Contrary to our expectations, the looted heart of the mound revealed no evidence whatever of a laid-up stone wall, and it soon became apparent that very little of the elevation was due to building up of an artificial structure. Removal of the freshly filled-in soil disclosed, as already mentioned, many loosely piled stones, bits of charcoal, and occasional scraps of scorched human bone. Also present were great chunks of burnt clay, of the color and nearly the hardness of old brick. These varied in size up to a maximum of 18 by 11 by 8 inches. Some presented one or more flat surfaces bearing the imprint of closely laid reeds, rushes, or slender rods, which in some instances appeared to have been burnt off. Many of the stones were pink to red in color, and one or two had been subjected to heat of such intensity that they crumbled readily into a light ashlike powder.

The central feature of the mound seems to have been a rectangular pit 6.5 feet wide by about 7 feet long, with the long axis lying east to west. The floor lay about 5 feet below the probable top of the mound, and about 4 feet below the normal ground surface. Details are obscure owing to the random nature of the previous digging, but on such portions of the pit wall as had escaped destruction there were interesting clues. Over a horizontal distance of about 30 inches along the west wall vertical shallow flutings or corrugations were traceable; their upper and lower ends had been dug out. Similar markings

were noted on the north and south walls. On the north they were directly on the clean subsoil; on the west and south walls 6 to 10 inches of rubbish-mixed earth intervened between the impressions and the steep slopes of the pit. These marks are believed to indicate the former position of closely set upright poles 1-2 inches in diameter. No impressions were found on the east side; they may have been dug out beforehand, though I am dubious about their ever having existed here. This doubt is based on the observation that a sort of chute, somewhat narrower than the pit, led upward from the floor of the latter to the top of the subsoil at the outer east edge of the slab area. The pit appears to have lain at the center of a shallow basin scooped out of the subsoil and of just sufficient diameter to have been completely covered by the slab layer. The rectangular pit was about 30 inches deeper than the floor of the basin where the latter dropped away to form the central pit.

No burials were encountered anywhere in this mound, but the presence of human-bone fragments is presumptive evidence that it was in some way connected with funerary rites. One or two tiny grit-tempered sherds were found, but these were in the refilled area and must be regarded with suspicion as possibly intrusive. In any event, they were too small and characterless to give any sort of clue to the ceramic complex to which they once belonged.

The extensive damage that the mound had undergone makes it well-nigh impossible to reconstruct the former details of its principal features. It seems likely, however, that an enclosure or platform originally occupied the central pit, and that this may have been open at the east end. The relation of this structure to the masses of burnt clay and scorched boulders is entirely problematical, but intensely hot or prolonged fires are certainly indicated. Curiously enough, there were no traces whatever of ashes, and the charred wood fragments were so small and few in number that they could have come from a handful of incompletely burned twigs and small branches. Also perplexing is the virtual absence of skeletal remains other than a handful of bone fragments, though it is possible that these are all that were left after removal by pot-hunters of the larger pieces. My guess, made only as a suggestion, would be that the mound was used either as a crematory, whence the surviving bones were carried elsewhere for final interment, or else that one or two individuals worthy of especial treatment were here given the final rites of cremation and burial. If it is true that the slabs originally covered the entire area, a burial rather than a mere burning place seems the more reasonable explanation, and for this reason I favor the second alternative.

Pearl B.—About 150 yards northwest of Pearl A, on a lower point directly overlooking the mouth of Pearl Branch and the Missouri bot-

toms, was a superficially very promising mound (fig. 12, 2). Stones protruded through the sod here and there, but aside from some apparently minor pitting in the center there were no signs that it had ever been entirely dug over. Its remarkable symmetry and the positive assurances of the owner and others that it had never been seriously investigated prompted us to stake it out carefully for detailed observations.

Trenches run in from the periphery quickly disillusioned us. Still in situ were flat-lying slabs forming a crescent 2 to 4 feet wide and about 17 feet across the tips. A number of fire-reddened rocks were noted, as well as bits of baked clay, charcoal, and a few scorched human bones. The central portion of the area and the entire north half of what may once have been a rough slab paving had been hopelessly destroyed. There was no evidence whatever of a central pit, of smaller graves, or of a laid up wall. The only artifacts found were a brown-glass arrowpoint, an oval flint knife, and one nondescript chipped flint, lying in a group just below the grass roots—clearly planted as a hoax.

Some time later it was learned that the mound had been opened at least three times previously within the past 15 years! We were able to learn nothing, however, as to the materials or information thus acquired.

Pearl C.—This mound (fig. 12, 3) measured about 30 feet in diameter by $2\frac{1}{2}$ or 3 feet high. A luxuriant growth of weeds covered its entire surface, partially obscuring an old pit dug into its highest part. A few minutes' work showed that the digging had been confined to the center of a stone-walled enclosure whose walls remained virtually intact. The slopes and edges of the elevation were apparently undamaged. In consequence, the entire mound was staked out in 5-foot squares and then completely excavated.

The weeds and earth covering and immediately surrounding the mound were cleared away over a circular area about 30 feet across. Within this area were the remains of a squarish stone-walled chamber against which large slabs had been piled on all sides. The chamber and its surrounding walls covered an irregularly circular spot about 20 feet across. The absolute limits of the structure were obtained by removing all topsoil for at least 3 feet away from the edge of the slabs and to a depth of 12 inches below the surface on which they rested. The outer edge of the slabs followed a rather ragged course, as though some of the stones had long ago slipped or been thrown out of their original positions. These were accordingly removed, with the results shown in plate 34, *a, b*. Originally the outer limit of the burial structure was evidently the edge of the large steeply leaning slabs most clearly shown at the bottom and right of the illustrations.

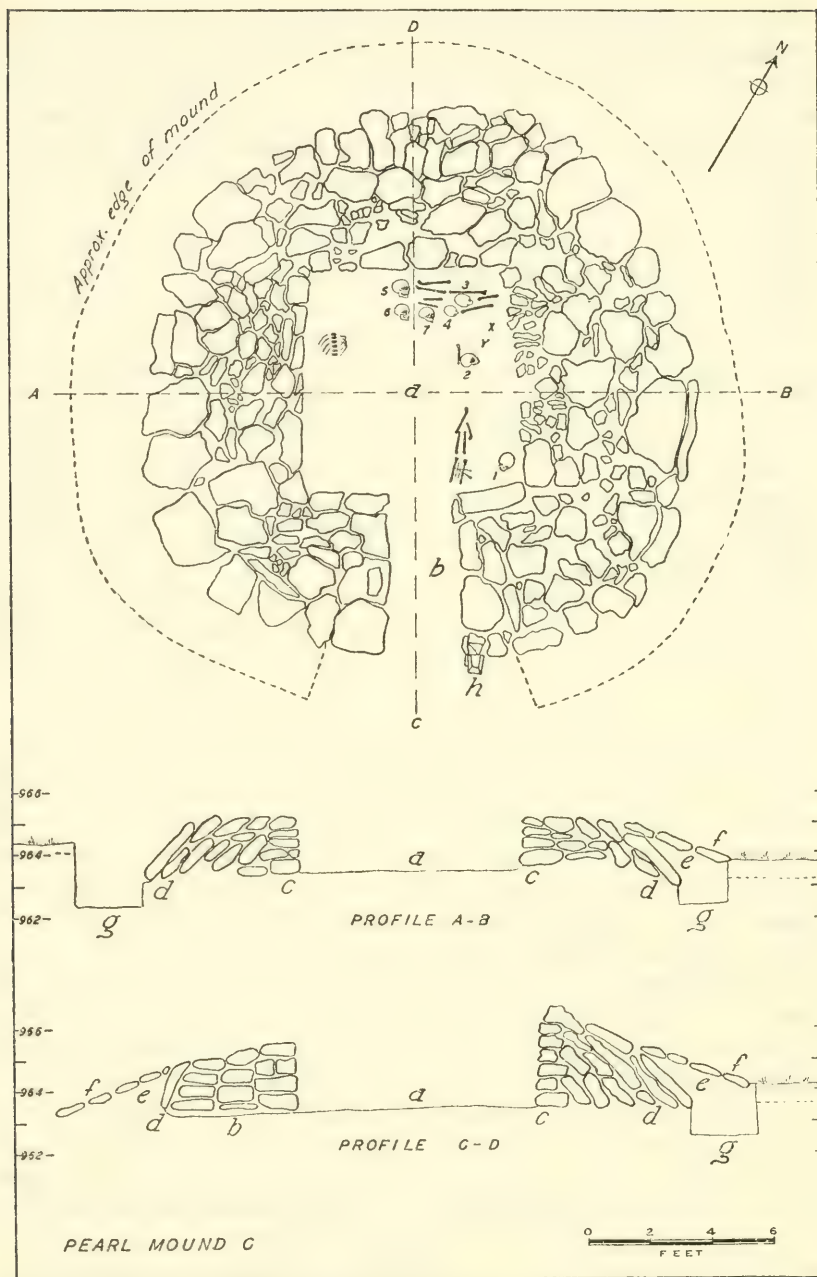


FIGURE 13.—Plan and profiles of Pearl mound C, near Waldron, Mo.: *a*, Burial chamber. *b*, passageway; *c*, inner wall surface, of horizontal slabs; *d*, outer leaning slabs; *e*, earth fill; *f*, mantle of small stones; *g*, floor of excavations; *h*, small burial cist; *X*, quartzite ball; *Y*, antler rubbing tool; 1-7, human crania.

The central chamber was subrectangular in form, oriented with the long axis northwest to southeast. The northwest wall was 76 inches long, the southwest wall 92 inches, the northeast wall 86 inches, and the southeast wall 87 inches. At the rear of the chamber the wall was 3 feet high; elsewhere it varied from 24 to 30 inches. The walls were built up, without mortar, of unshaped limestone slabs and blocks, four or five courses being all that were necessary. Scattering rocks were fire-reddened, but in all cases the adjoining stones showed no such discoloration. Broken joints at the corners were not noted. The northeast wall had sagged inward a few inches at the top; the others leaned outward slightly. All rested on a flat loess floor, and presented a reasonably even interior face. Backing the walls were other stones, some flat lying, others leaning, all placed evidently with less care and exactness than those used in the walls.

Interrupting the southeast wall was a short passageway 26 inches wide; its inner end was 37 inches from the south corner of the enclosure but only 24 inches from the east corner. Short laid-up walls flanked the passage where it cut through the outer buttressing stones; that on the west side leaned in slightly at the top. The passage was about 5 feet long, which figure also holds for the thickness of the wall and backing stones on the southeast side of the structure.

The earlier digging, as already noted, had been pretty well confined to the center of the enclosure; it had also been done with less than the customary thoroughness. The floor of the chamber had been reached, but a strip 1 to 2 feet wide lying just within the base of the walls and all around the enclosure had not been disturbed. Here, lying on and a few inches above the loess floor, were the skulls and at least some of the other bones of seven burials. The earth above them contained scattered stones, but it is not certain whether these formerly lay across the top of the enclosure or are due to other factors. Bits of charcoal and burnt clay were also scattered through the earth fill.

For the most part the skeletal remains lay near or against the rear and northeast walls (pl. 34, *c*, *d*), and were evidently the results of secondary burial. Skull 1, broken, lay in the east corner; No. 2 was a few inches from the northeast wall, and Nos. 3-7 lay in a scattered group at the rear. There is a bare possibility that No. 2, along with paired tibiae, fibulae, and femora extending to the corner of the passage, represented a primary supine interment, most of whose torso and arms had been somehow displaced or removed. Otherwise, the long bones found had been piled promiscuously over and among the various skulls in such disorder that related skeletal parts could not be segregated. Skulls 6 and 7, both broken and incomplete, were burned to a shiny black color, and a few of the other bones also showed evidence of exposure to fire, but the majority were unburned. The

calcined bones lay in direct contact with others not burned, so that the scorching probably took place elsewhere than in the final burial chamber.

Artifacts were few in number and, while undoubtedly inclusive, are of no value in ascertaining the cultural affiliations of the remains (pl. 35, *c-e*). Near skull 2 was a round quartzite pebble partly pecked into a ball 54 mm. in diameter. Two smaller and less regular specimens, with diameters of 49 and 37 mm., lay among the bones near the north corner. A nicely finished fire-darkened antler rubbing tool, 107 mm. long by 26 mm. in greatest diameter, lay on the floor 4 inches from the northeast and 20 inches from the northwest wall. The proximal end is rounded and polished; the distal end, slightly broken, has been neatly cut off and rubbed. There was no pottery.

Beneath a large slab at the outer end of the wing wall, which formed the east side of the passageway, was a tiny cist about 8 inches square (fig. 13, *h*). Its sides consisted of three small flat stones set on edge, the fourth side being one of the slabs of the bottom course in the entrance wall. The cist contained a few bones from a very small child. It is uncertain whether this feature represents a part of the original burial mound or whether it was added later, perhaps by a group unrelated to the individuals and archeological horizon represented in the central chamber.

The general procedure followed in constructing this tomb seems fairly clear. First, all topsoil had been removed so as to provide a smooth, level, burial surface. Long flat slabs, evidently selected for their regularity of shape, were then laid directly on this surface so that the inside edges formed a square. Additional courses of stone, to the number of three or four, were placed on this foundation, their inner edges being laid plumb with those below. Less regularly shaped boulders were laid and piled, or leaned, against the outside of the wall until a thick strong enclosure resulted. Wing walls, similarly built, flanked a narrow passage opening slightly east of south. Whether the structure was ever roofed with poles or slabs is unknown. Neither is it clear whether the passage was actually functional or only ritualistic in purpose. The presence of stones in the dirt within the enclosure suggests that slabs may once have extended over the entire chamber, but there is nothing to show whether they lay on a dirt fill or were elements in a roof which sagged and finally collapsed to be subsequently buried by wind-blown dust.

Pearl D, E.—Two small mounds, both badly torn up in the year prior to our digging, require only brief mention. D (fig. 12, 4) evidently contained a rectangular chamber 9.7 by 6.8 feet, the long axis running 30–35° north of east-west. The southeast corner was ob-

scured by fallen stone, but the others were all nicely squared. Original height of the walls is conjectural, but in the northwest corner the stones still stood three courses (22 inches) high. The entrance was to the south and had been almost wholly wrecked; its west side was only 30 inches from the west wall of the vault, and so decidedly off center. Its width seems to have been about 30 inches; the length must have been very inconsiderable because of the steep declivity on which the doorway opened. The mound limits, as indicated by stones still in situ lay about 5 or 6 feet beyond the inner wall of the chamber, thus covering a total area of some 18-20 feet across. None of the stones observed showed any traces of exposure to fire, nor did the much disturbed fill contain any charcoal or burnt clay. A few scraps of bone, unburnt, were noted. The floor, at any rate that portion examined, consisted of the loessial subsoil, smoothed but otherwise without signs of special preparation for burial purposes. There were no artifacts, nor do I know the nature of the material removed prior to our work.

Pearl E (fig. 12, 5) was smaller and had been utterly demolished. No two stones certainly retained their original position. I do not know whether this was a small vault or a slab-covered pit; the condition of the mound permitted no inferences one way or the other. There were no traces of fire, of artifacts and burnt clay, or of bones.

About 300 yards south of the Pearl mounds, on a point overlooking the next little valley below Pearl Branch (fig. 12, *B*), a few hole (shell) tempered and incised sherds and loop handles have been picked up from time to time. Possibly a mound once stood here, but today no satisfactory evidence of the fact remains.

Nolan A.—This mound, one of the smaller ones of the Pearl Branch group, lay just east of the Pearl-Nolan line fence on the highest point of the ridge (fig. 12, 6). It was marked by a subcircular stone-covered elevation 18 to 20 feet across by about 2 feet high. A few feet west of the center was an elm tree with a trunk diameter of 15 inches. To the northwest was an irregular refilled area measuring about 6 by 3 feet, which had been opened during the preceding summer (1937) by Albert Hansen. The general appearance of the mound when cleared of trees, grass, and earth, and with the surrounding topsoil removed to a distance of 3 feet beyond the limit of the stones, may be judged from plate 35, *a*. It will be noted that no stones were visible over the central area or over the short entrance passage extending toward the lower right-hand corner of the photograph.

Within the chamber the gray topsoil was only about 4 inches deep, as contrasted to a thickness of 10 inches or more at other unbroken places on the ridge. For the most part, light yellowish gray loessial soil directly underlay the topsoil. In the southeast corner bits of

burnt clay, charcoal, and calcined bone were scattered through the fill from a point beginning a few inches below the topsoil. Except as noted above, there was no evidence that the fill had been disturbed prior to our work.

The chamber, when cleared (pl. 35, *b*), proved to be approximately square (fig. 14), with an average depth of 30 inches. The west wall was 8 feet 4 inches long, the north wall 7 feet 9 inches, the south wall 7 feet 5 inches, and the east wall 7 feet 5 inches. The walls averaged about four courses in height, and a few stones scattered through the

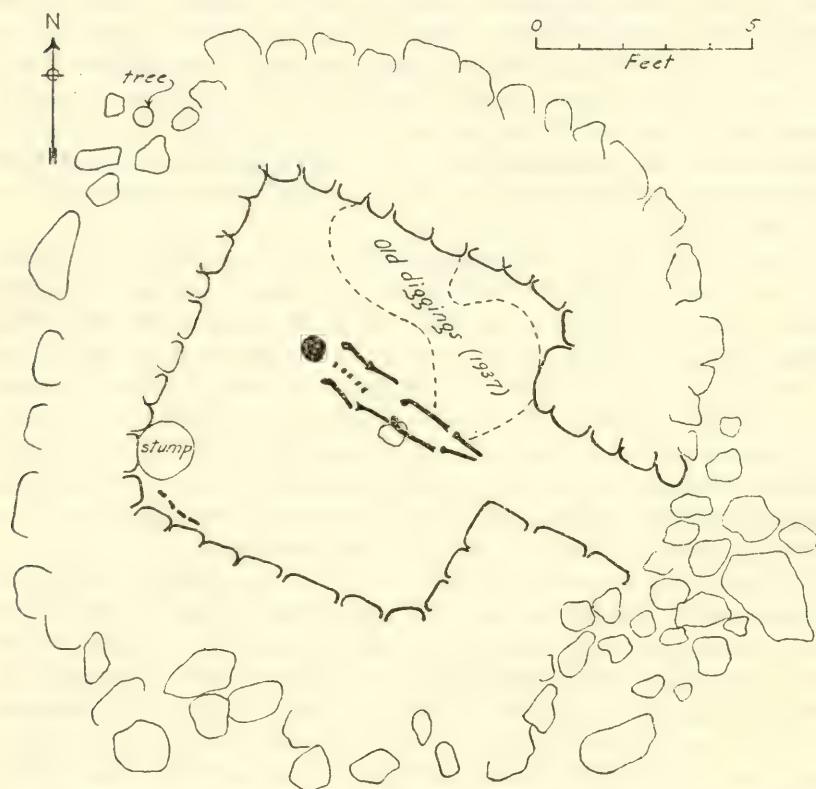


FIGURE 14.—Plan of Nolan mound A, showing position of extended burial inside chamber.

upper two layers were fire-reddened. Whereas the east and west walls were plumb or nearly so, those on the north and south leaned outward at the top by 4 to 6 inches. No attempt seems to have been made by the original builders to square the inner courses, and in the northwest, northeast, and southeast angles there appears to have been a deliberate effort to "tie" the adjoining walls by diagonal stones across the corners. In the northwest and southeast corners the diagonal block was in the third of four courses; in the northeast it was the fourth of five layers. The southwest corner had been so distorted

by the trunk and roots of the elm tree already mentioned that structural details were obscured. It is uncertain in what order the walls were laid up, but, excepting the diagonal ties, it was noted that the east and west walls abutted the north, while that on the south was apparently built up against the west, and the south and east walls merely came together.

The largest stones, measuring up to 36 by 12 by 6 inches, were those at the base of the east wall and in the wings flanking the passage. Two large slabs, one on each side of the doorway, formed the lowermost course of the east wall. The passage, 33 inches wide by about 45 inches long, was not centered, since its inner end divided the east chamber wall into a 24- and a 32-inch section. An apron of rocks and slabs, evidently piled up by the original builders, closed the outer end.

There is reason to believe that a shallow pit was dug on the spot before the tomb was laid up. Our profiles show that the floor of the chamber lay at least 12 inches below the normal top of subsoil, if the latter be projected through the mound. The presumed pit must have been large enough to allow for at least the wall, since this went down to the bottom of the burial area. Since permission to check this point by breaking down the buttressing rocks outside the coursed walls was refused, we were unable to corroborate it by direct observations.

A single poorly preserved skeleton, too fragmentary to be collected for measurements, was found on the floor of the enclosure. Evidently buried in the flesh, this lay extended at full length and prone, with the feet a few inches from the doorway and the head toward the west. A badly broken skull, the long bones, and traces of vertebrae were all that remained. Over the distal end of the left femur lay a burnt stone. From this bits of charcoal were scattered northward to the right femur, which was fire-blackened. From this it would appear likely that a small fire had been built over the pelvic region of the corpse before it was covered with earth. Hansen states that a second skeleton, also extended at full length, was found in that portion of the chamber dug by him, but he was unable to supply further details as to its exact position.

No artifacts were found by us, nor does Hansen report any from his digging. Aside from the features already noted, we may mention fragments of a charred pole 12 inches long by 3 inches in diameter, which lay on the floor near the southwest corner of the enclosure.

Nolan B.—East and slightly north of the preceding, on a lower eminence about 150 yards distant, was a larger mound (fig. 12, 7), which had been more extensively looted. Our measurements do not reliably indicate its former size, owing to the fact that field stones from the surrounding tillable ground had for years been piled here

out of the way. An area about 25 feet across and 2 feet high was covered with stones, loose and in situ, brush, weeds, and young basswood trees. An irregularly oblong area at the highest part showed fewer stones but no definite wall outlines.

Excavation disclosed a subrectangular chamber measuring approximately 78 by 87 inches, with the greater dimension along the north-south axis. The entire northwest corner and adjacent walls had been torn out by vandals who apparently cut a trench from the edge of the mound well into the chamber and to a distance of several inches below floor level. Where not wrecked in consequence of this recent work, the walls had been carefully laid up in four or five courses to a height of about 24 inches. Burnt rocks were noted in the upper walls and along the crest, but always as isolated examples surrounded by others untouched by fires.

Details relating to wall construction were gathered by carefully cleaning out the earlier trench. It was found that the carefully laid inner wall of the enclosure was backed by a second but lower series of slabs lying horizontally, or nearly so. Against these were piled heavy blocks and leaning slabs, until the base of the wall had reached a thickness of about 5 feet. The outermost slabs slanted at an angle often exceeding 50° from the horizontal and in instances were nearly vertical. The ground area covered at this stage did not exceed 16 or 17 feet in diameter. About the base of this thick rock wall, earth had been piled to a depth of 12 to 18 inches, and this in turn was covered with a mantle of much smaller stones sloping evenly downward on all sides of the structure to cover an area, at present, about 25 feet across.

The passage, opening in a direction south by east was about 30 inches wide at the inner end, 24 inches wide at the outer, and 4 feet 6 inches long. As with other mounds in the Pearl Branch group, the passage could be traced easily through the main wall, although the superficial layer of small rocks extended about 3 feet beyond its outer end.

Contents of this tomb were rather disappointing. Parallel to, and about 9 inches from, the east wall were the legs and an incomplete innominate bone of a badly burned skeleton interred in a supine extended position. Bones of the left foot were 15 inches from the south wall, with the proximal end of the femur 36 inches from the north wall near which the skull must once have lain. The right femur had been destroyed by the pothunter's trench. All these bones lay 12 inches above the floor and may not have formed part of the original remains buried within the chamber. Burnt stones and clay were found at this level and in the overlying fill but were absent from the fill below. At a lower level, on the vault floor in the southwest corner,

were scattered unburnt fragments of skull, long bones, and innominate bones, all bearing the marks of rodent teeth. There were no artifacts whatever.

Nolan C.—In certain respects this mound (fig. 12, 8) proved one of the most interesting of the entire Pearl Branch group. It was about a hundred yards in an easterly direction from B and, like the latter, had never been plowed. Loose stones on the surface had clearly been piled in recent years, so that it is difficult to estimate the former dimensions of the mound. The area covered when we first saw it was about 25 feet across, and at its center the stones reached a height of nearly three feet above the periphery. Except for two small recently dug spots near the summit, it bore a tangle of brush including young elm, hackberry, and boxelder, with a very tenacious undergrowth of sumac and poison-ivy. The latter, growing thickly among the rocks, had to be grubbed out by hand, to the no small discomfort of most of our workers.

Our interest in the mound had been whetted by the earlier excavations of Mr. Hansen, who presented us with fragments of two pots found, apparently, near the surface. On clearing out the dug portions, we found that most of the upper 12 inches of fill in a rectangular enclosure had been turned over. Hansen's explorations had penetrated to a depth at the center of about 4 feet, i. e., nearly a foot below the vault floor. In the southeast and northwest corners, the deeper portions of the fill had not been disturbed.

The walls of the chamber, except on the south, were found to be straight and well laid (fig. 15). The rear (north) side was 6 feet 2 inches long, the west 6 feet 9 inches, and the east 7 feet 3 inches. The south side, which opened into a walled passage, was bowed outward, and measured 7 feet 2 inches in length. Four or five courses of stone had been used, and the wall averaged between 26 and 30 inches in height. The passageway, 6 feet long, had a uniform width of 25 inches.

Within the enclosure large boulders and burnt clay were scattered through Hansen's diggings, but he was unable to state clearly just how these had occurred originally. Our own observations, based on work in the northwest corner, which had been partly protected by a tree stump, revealed an undisturbed layer of burnt stones 21 inches below the surface. Beneath these was a mass of charred sticks and twigs, which, at a depth of 26 inches, was traced eastward from the stump and probably marked the original floor or burial surface. A charred slab, 6 inches wide by 15 inches or more in length, suggested a split log or rough board. In and just under the charcoal layer were bits of calcined human bones, which so far as quantity is concerned

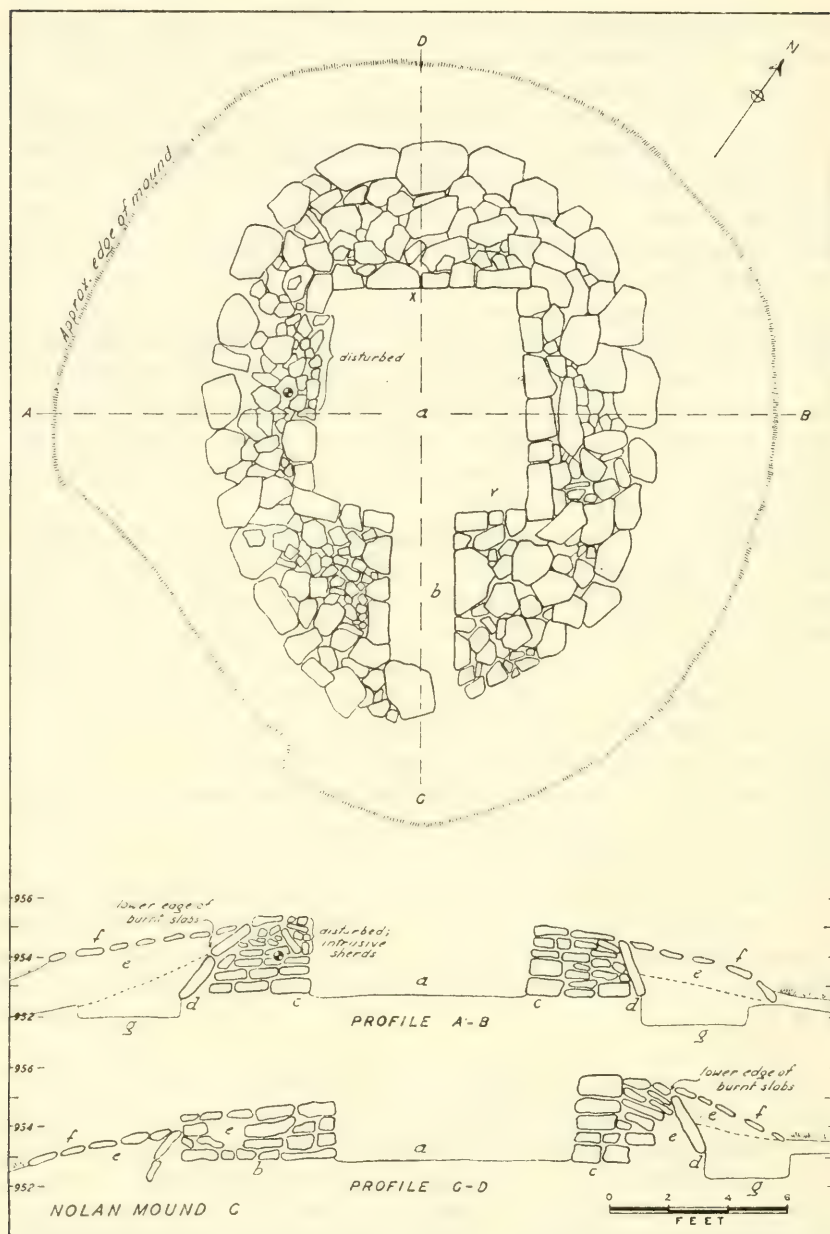
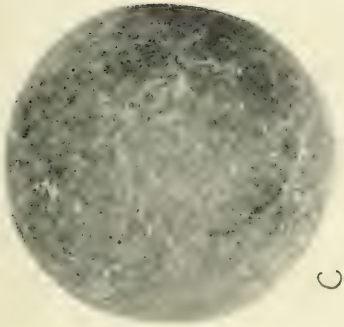
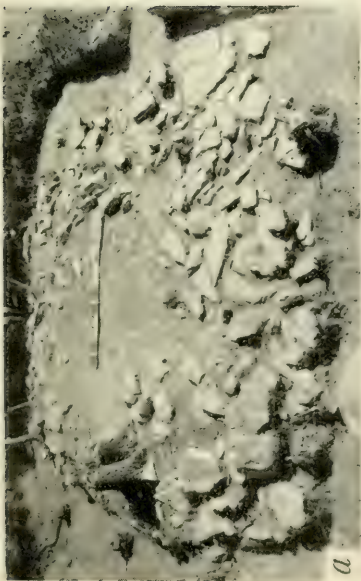
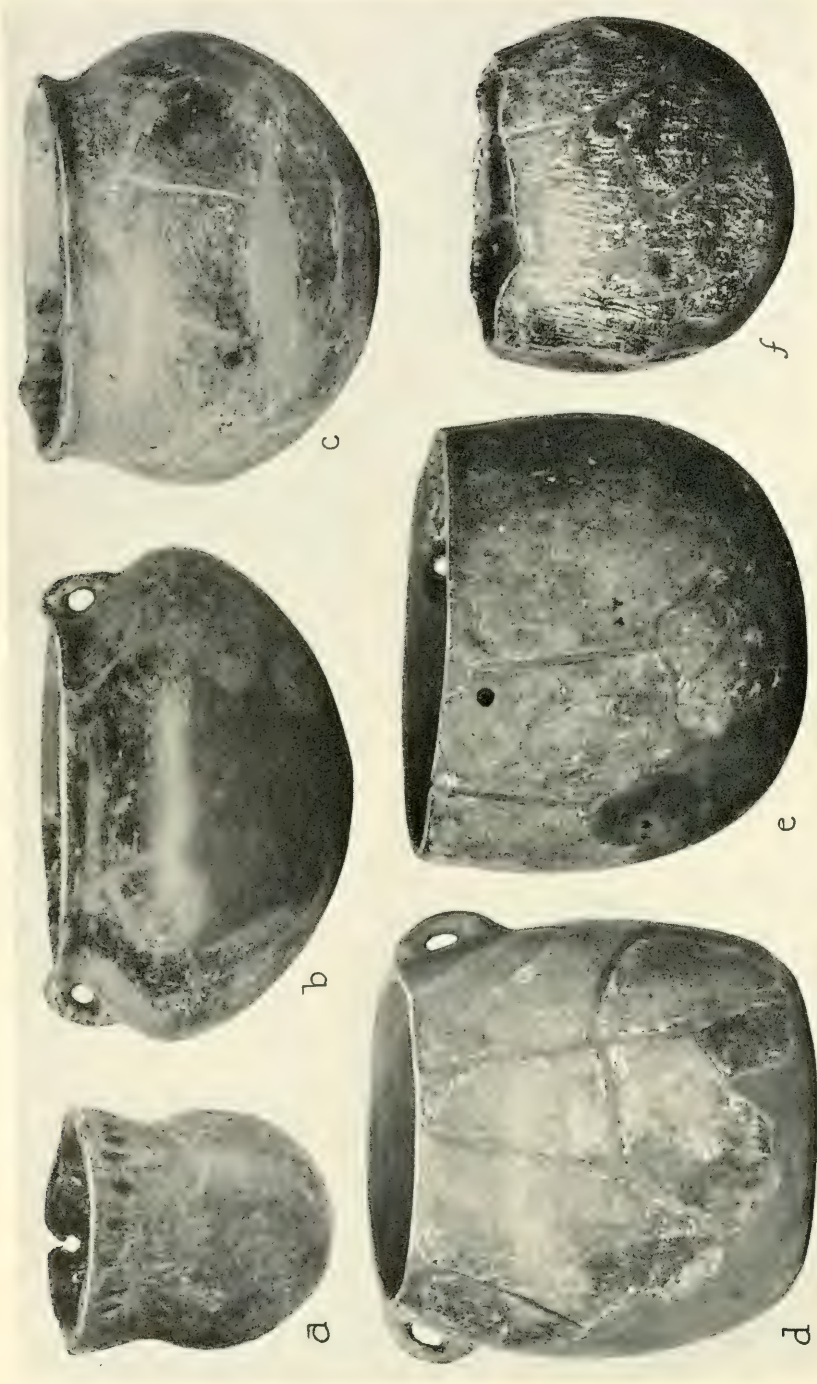


FIGURE 15.—Plan and profiles of Nolan mound C: *a*, Burial chamber; *b*, passageway; *c*, inner wall of horizontal slabs; *d*, outer leaning slabs; *e*, earth fill; *f*, mantle of small stones; *g*, floor of excavations; X, miniature pottery vessel, inclusive (U.S.N.M. No. 381387); Y, pottery vessel, probably intrusive (U.S.N.M. No. 381392). Quartered circle indicates intrusive sherds.



MOUNDS AND ARTIFACTS FROM PEARL BRANCH GROUP

a, Nolan mound A, cleared but unopened, from south; b, the same opened, from north; c, d, e, stone balls and antler cylinder, Pearl mound C.



RESTORED VESSELS FROM NOLAN MOUND C.
a, inclusive; *b-f*, probably intrusive.

could have come from a single individual. There was nothing which could be measured or would otherwise afford the slightest clue to the physical type of the individual represented.

Near the middle of the north side, 6 inches from the wall and about an equal distance above the floor (fig. 15, X), was a miniature pot (pl. 36, *a*). This will be described presently, but we may point out here that it lay below the undisturbed rock layer and just above the charred sticks and bones. From this we may conclude that it was deposited within the tomb at the same time as the skeletal remains, presumably as a funerary offering.

Another pot, badly broken but clearly of very different character, was found near the southeast corner of the enclosure (fig. 15, Y). Bottom side up, it lay about 6 inches below Hansen's diggings and nearly 2 feet above the floor. The fill here, lacking a boulder or charred wood and bone stratum, did not permit a positive determination of the relations between pot and burial remains. It is certain, however, that the enclosure had been filled, in this corner at least, to a depth of almost 2 feet before the pot was placed. I doubt that it was directly associated, temporally or culturally, with the miniature pot mentioned above or the burials for which the mound was originally built, and from certain evidence to be presented next I am strongly inclined to suspect that it was an intrusive item of more recent origin.

As already indicated, the walls were generally well laid and solid. On the west side, however, beginning about 12 inches from the northwest corner and continuing to a point about 27 inches from the southwest corner, was a section where the evenly coursed slabs gave way to a mass of smaller rocks. Their inner face was continuous with the larger slabs on each side but did not present so regular and orderly a placement. This disturbance of the wall reached a depth of about 24 inches, below which were one or two courses of large slabs similar to those at each end of the wall and elsewhere about the chamber.

That a portion of the wall here had been removed and later rebuilt with much less skill than that exhibited by the original builders seemed evident. Hansen's excavations touched the wall along most of the disturbed section, but he insisted that no stones had been dislodged from the wall line itself. It was specifically noted that whereas interstitial areas between boulders in his backfill were often still open and sometimes contained bits of paper, match sticks, and dry straw, spaces between the stones in the wall were uniformly full of firm moist earth traversed by unbroken tree and grass roots. These circumstances rule out the possibility that Hansen might inadvertently have cut into the chamber wall, and the well-developed root growths would argue against any molestation within recent decades.

Careful dissection of the wall produced further evidence that the disturbance was old and not attributable to present-day relic collectors. Forty inches from the southwest corner of the chamber and 15 inches below the mound surface, at a point 12 inches back from the wall face, we found a number of shell-tempered potsherds and several fragments of human bone. Some of the sherds were cord-roughened and have since been reassembled into a small pot (pl. 36, *f*). Others, bearing simple linear incisions, permitted restoration of a deep bowl (pl. 36, *e*). Most of the remainder were found to belong to two other shattered jars (pl. 36, *c, d*) unearthed by Hansen within the vault near the ground surface and by him presented to the national collections. More fragments of these last vessels, apparently overlooked in the earlier digging, lay on a flat boulder against the west wall, 8 or 10 inches underground. Unfortunately, it is not possible to say just where Hansen's finds were made with reference to the disturbed section, but, as the above distribution and association of sherds will show, there can be no doubt that they were also connected with whatever circumstance led to partial demolition of the original chamber wall.

When the chamber had been completely emptied, and before back-filling was undertaken, cuts were made through the west, north, and east walls in order to determine the method of construction. From these it was evident that in general the procedure paralleled that manifested in Pearl C, but that certain variations also had taken place. At the risk of some repetition, we may recapitulate the story of events as follows: First, a flat space about 18 feet in diameter was cleared to a depth of several inches (probably not more than one foot) below the topsoil. In the middle of this floor, which was not otherwise elaborated or specially prepared, a series of flat slabs was laid down to enclose a rectangular area. Additional slabs were placed atop this foundation series to a height of three or four courses. Other stones rising to a lesser height were laid about the outside to a thickness of about 3-3½ feet, and these were held in place by large irregularly shaped slabs leaning inward at a steep angle. At this point the wall was 4 or 5 feet thick, and the entire structure was about 16 to 18 feet across. A walled passage, carefully squared with the chamber, opened from the southerly side, in a direction about 30° east of south. Perhaps it was at this stage of construction that the charred bones, probably due to cremation, and the miniature pot were placed in the tomb. On the west and north sides, stones in the upper 12 inches of the mound were nearly all burned to a bright red color. I am inclined to attribute this to a very hot fire built over the tomb, but only after earth had been piled to a height of about 18 inches against the outer wall. This conclusion is based on the very sharp

line separating the reddened upper stones from the unaltered ones below, a color line that in one or two instances cut across some of the larger individual upright slabs. I am unable to decide whether this was the full size of the tomb as originally planned and constructed, though it would seem a plausible view. Likewise, it is impossible to say whether the chamber was roofed over with poles and brush or, alternatively, filled up with dirt. The stones we noted therein are in all probability some that were displaced when the west wall was torn out.

The smaller stones that mantled the earth about the structure, as also in the case of Pearl C, may once have covered the central chamber, but this point cannot now be conclusively established. On the other hand, it is possible they were added much later, perhaps by the persons who pulled up part of the west wall, deposited some pottery and a few bones or else a skeleton that has since disappeared almost completely, and then clumsily replaced the stones. Because of the previous digging it was wholly impossible for us to trace the limits of this intrusive grave, which, inferentially, extended a short distance into the vault. Despite the fact that certain details must remain forever obscure or wholly unknown, I feel certain that the five shell-tempered pots found in and near the disturbed west wall and in the upper fill in the southeast corner are intrusive and can be attributed to a group distinct culturally and temporally from those who erected the stone enclosure and placed therein the cremated human bones and the miniature pot found near the base of the north wall.

Plate 33, *b*, *c*, shows clearly the general appearance of the partially excavated mound, and a comparison of *c* with figure 15 will indicate the interrelationships of the chamber, wall, surrounding earth fill, and rock mantle.

Artifacts from the mound included one complete and five broken pottery vessels. The complete specimen, which lay on its side near the base of the north wall, is amphora-shaped and measures 53 mm. in height (pl. 36, *a*). Body and rim alike have a maximum diameter of 49 mm., and the neck is 43 mm. across. The walls, buff-gray in color, are of variable thickness and the surface is uneven. The only attempt at ornamentation is a row of small elliptical punch marks just below the lip. Two of these marks, on opposite sides of the vessel, have been punched through the wall perhaps for attachment of a thong or cord handle. There is no visible tempering. The pot looks like the product of a child or an inexperienced potter, or it may have been a miniature placed in the grave in lieu of one of the larger utilitarian vessels contemporaneously in use among the natives.

The jar from the southeast corner of the chamber is of wholly dissimilar type. Squat in vertical section, with a height of 9.2 cm.

and a maximum diameter of 15 cm., it has a hemispherical underbody, rounded shoulder, flattish upperbody, constricted neck, low very slightly recurved rim, and a plain rounded lip (pl. 36, *b*). Two flattened loop handles on opposite sides extend from the lip to a point about midway between the neck and shoulder. The surface, dark gray with lighter brownish blotches, is pitted, but from the shoulder up gives evidence of once having been polished. Fresh breaks exhibit a flaky appearance, with thin flat cavities left by dissolving of a freely used crushed shell aplastic. The upperbody carries four pairs of shallow curving trailed lines, placed opposite one another and equally spaced about the vessel. In each unit the lines begin at the shoulder, curve upward nearly to the neck, and end again at the shoulder. So lightly were they applied that the photograph does not bring them out.

Among the four vessels restored from sherds found in and near the disturbed west wall, the cord-roughened little specimen in plate 36, *f* is, in some respects, aberrant. In shape it resembles a coconut from which one end has been cut. The restoration, which is probably accurate, gives it a height of 9.6 cm. with exterior diameters of 11.2 and 9.2 cm. at equator and rim, respectively. The walls vary in thickness from 4 to 12 mm., as if built up by shaping between the fingers, and the sharpish lip has an irregular undulating surface. Vertical impressions of coarse cords cover the exterior and apparently extended onto the base, but over these impressions there is a polish suggestive of much handling and usage. The paste differs from that in the associated vessels in giving a coarse granular fracture surface. Thin white opaque inclusions, soluble in dilute hydrochloric acid, have been tentatively identified as crushed shell. The exterior surface is pitted in a fashion similar to that of the usual shell-tempered pots, though to a much lesser extent.

The bowl shown in plate 36, *e* was also rebuilt almost wholly from fragments out of the grave wall. Round-bottomed, with sides converging gradually toward the rim, it has a height of 12.5 cm. and a diameter of 14.5–15 cm. The prevailing color is brownish buff, but there is some evidence that this is due to the peeling of a darker slate-gray slip which may have been polished. The paste is gray with a flaky fracture and is thickly mixed with fine shell fragments. Walls average 4 mm. or less in thickness. Two round holes, each 6 mm. in diameter, pierce the wall about 12 mm. below the lip on opposite sides of the bowl. There is a rudely incised zigzag line on one side about midway between base and lip; traces of a rectilinear pattern of equal crudity occur on two rimsherds not fitted into, but clearly part of, the vessel.

The two vessels restored from sherds collected partly by Hansen and partly by us are shown in plate 36, *c*, *d*. The larger of the two, *d*, is 13.4 cm. high and about 14.5 cm. in greatest diameter. Flat bottomed, it has bulging sides, which are drawn in somewhat at the top and give a barrel-like effect. The walls are thin, probably everywhere under 4 mm. Just below the lip is a slender vertical loop handle; that on the right in the illustration is restored. Surfaces are undecorated except for traces of two faint horizontal lines just below the lip. The paste, where exposed by a peeling slip of dark gray, is reddish brown in color. In places the slip shows a network of very fine irregular cracks, and there is evidence that it was once polished. Broad shallow striations, presumably a result of the use of a smoothing tool, run in an oblique fashion across the interior surface.

The other specimen is globular in shape, with constricted neck, flaring rim, and rounded lip (pl. 36, *e*). It has a diameter of 14.8 cm. and a height of 11.2 cm. Color varies from light buff to dark gray, and the surfaces have been indifferently rubbed down; both interior and exterior show striations from the smoothing process, in addition to pitting left by leaching of shell particles. The vessel is heavier than the two preceding ones, and the walls as a whole probably slightly exceed 5 mm. in thickness. There is no ornamentation whatever, unless two low rounded eminences applied to the lip be so considered. They are spaced in such manner as to suggest that a third unit was intended, but if so it seems never to have been added.

Nolan D.—This structure, farthest east of the group (fig. 12, *g*), loomed prominently as a rock pile devoid of brush or earth covering. It was about 18 feet in diameter and, owing to erosion of the surrounding tilled ground, rose to a height of nearly 3½ feet. Removal of a superficial layer of small stones revealed a nearly square chamber about 6½ feet across. The walls facing into the chamber were as carefully laid up as those in any of the other mounds. They consisted of four or five courses, which reached an average height of about 20 inches. The stones were of a size comparable to those in other mounds; the largest was 40 by 6 by 13 inches. Here and there one showed fire-reddening, but these were always set among unburnt specimens. None of the enclosures in the Pearl Branch group was laid out exactly on the cardinal points of the compass, and most of them opened in a south-southeasterly direction. The present structure was farther off than most, however, in that the corners pointed very nearly to the cardinal directions. Unlike the others, too, the passageway, narrowing from a width of 28 inches at the inner to 23 inches at the outer end and 4 feet long, opened toward the southwest. One side of the passage and the adjoining wall near the west corner had been partly torn out by earlier excavators. The outer walls, like

those in Pearl C and Nolan B and C, consisted of large leaning slabs that had been mostly obscured by the covering of small rocks. Diameter of the original mound, as measured between the base of the large slabs on opposite sides, was about 16 feet.

Though there was no evidence, when excavations began, that the tomb had been previously molested, the lack of clearly marked soil zones, together with an all but complete absence of human bones, soon gave rise to a suspicion that we were not the first to enter it. A poorly preserved mandible was found 5 inches above the floor at a point 12 inches from the northwest and 6 inches from the northeast wall. Close to the southeast side, on the floor, was a broken femur. A careful examination of the floor, following discovery of the partly demolished wall near the west corner, soon disclosed the fact that the entire chamber had been cleared previously. In the north half, the old diggings went down at least 27 inches below the original floor of the enclosure on which rested the lower course of stones; elsewhere the burial surface had been reached and evidently searched thoroughly for "relics." The present owner insisted that the mound had never been opened, and from its general appearance and the relatively compact settled nature of the fill I should judge that the looting probably took place many years ago. There was, of course, no means of learning the identity of the parties responsible, or the nature of their findings.

Babcock A.—Immediately north of the Pearl Branch road the bluffs fronting on the Missouri bottoms rise steeply to culminate in a narrow hogback from which the ground falls away more gradually east and south to the creek. Within the limits of figure 12 this hogback nowhere assumes a width of more than 10 yards, and much of it is even narrower. A heavy growth of timber covers the west slope, but on the Pearl Branch side sumac and similar low growths are more typical. Along the ridge we tested several small elevations, which suggested artificial mounds, but all gave only negative results. The two mounds located on the map had both been opened within the two or three years preceding our investigations.

Mound A lay at the upper end of the ridge (fig. 12, 10), just south of the point where it widens sufficiently to offer a flat easily tilled patch of ground. This is about 800 yards north of the Pearl and Nolan tumuli. It was impossible to ascertain the mound limits, or to estimate its height, though I doubt that the diameter ever much exceeded 15 or 20 feet and the height 2 feet. A three-foot trench, only recently refilled, had been cut through it in a north-south direction. This we reopened for a study of the profile, after which the entire central burial area was completely excavated.

The internal structure of the mound was wholly unlike those previously explored. An elliptical basin measuring 13 feet in a north-

south direction by 9 feet wide, had been scooped out to a depth of about 6 inches into subsoil. The floor, which was nearly flat, lay less than 2 feet beneath the present mound summit. Small stones, gravel, lumps of burnt clay, and charcoal fragments were scattered promiscuously through the fill, and with them were mixed fragmentary human bones. In no case were the bones or other materials stratified or otherwise segregated, nor were any of the skeletal remains articulated. The bones lay for the most part in the lower 12 inches. There was no evidence of any attempt at an enclosing wall or a definite protective cover of stones. Secondary burial of disarticulated bones from bodies previously exposed would seem to be indicated, and it is very probable that more than one individual was represented. A few of the bones showed pathological conditions similar to those found in Pearl C.

During reopening of the old trench we found a number of fragments of thin, well-smoothed pottery tempered with finely crushed shell. Other sherds, probably from the same or a similar vessel, were in the undisturbed pit fill. They are insufficient to permit restoration but are suggestive in nearly all respects of the smooth, deep, thin-walled bowls found, intrusively, in Nolan C (cf. pl. 36, *b*, *d*, *e*). From their scattered occurrence I should suspect that they were either thrown into the burial pit as fragments or else that a whole vessel or vessels had been pretty completely shattered before the grave was filled up.

Fortune favored us in that the previous excavators, starting with a trench 5 feet wide at the top, had narrowed their cut to 2½ feet at the bottom. Two feet from the east wall of the burial pit, 10 inches below the mound surface but less than 6 inches beneath the earlier trench, we uncovered the nearly complete cord-roughened jar shown in plate 37, *a*. It is gray in color and lacks the pitting so characteristic of the cell (shell) tempered wares. Inclusions are not readily seen with a hand lens, but they seem to consist of moderately fine (1-2 mm.) rounded translucent particles of siliceous matter sparingly used. Roughening was apparently done with a cord-wrapped paddle; on the upper part of the body the impressions are vertical, but farther down the sides and on the base they frequently crisscross. The body is globular, with a diameter of 15 cm.; the neck, constricted, is 10.9 cm. wide; and the rim flares outward to terminate in a plain rounded lip. Walls average 4-6 mm. in thickness, with the base heaviest. The interior surface is uneven and "dimpled" as if smoothed by pressure from the fingers; except on the rim there are no striae suggesting use of a smoothing stone.

Aside from the pottery, the only artifact recovered was a small, flat, calcined shell disk bead about 8 mm. in diameter.

Babcock B.—This mound was situated near the southern tip of the hogback, 500 yards southwest of Babcock A, on a small shelf directly across the mouth of the valley from Pearl B. It was completely excavated by two young men from Kansas City in July 1937, though I was unaware of this work until so advised by Shippee the following fall (letters of November 3 and 14, 1937). When I examined the mound in 1938, it proved to be a crude walled enclosure basically of the same type as those on the Pearl and Nolan properties. The chamber was elliptical in plan, 9 feet 6 inches wide by 10 feet long, with the long axis north and south. The wall, generally with two but on the north side with four courses of slabs, averaged between 15 and 20 inches in height. At the south end a gap 4 feet wide opened into a sort of subcircular vestibule 5 feet wide by 4 feet long. This showed no clear evidence of ever having been walled, and the excavators aver that no carefully built passage, like those at Nolan's and Pearl's, existed. The excavations everywhere had been put down to a depth of nearly a foot below the base of the wall, but I am not certain whether this is due to the fact that a burial basin actually existed. Nothing in the dirt thrown out, or in the excavator's remarks, indicates that a prepared burial surface of sand, gravel, rocks, or puddled clay existed, though it seems likely that the floor had been at least smoothed down. None of the stones showed a discoloration due to fire, nor did we note any burnt clay or charcoal in the fill thrown out.

As to the contents of the chamber, our remarks rest wholly on informal information supplied by Mr. Hansen. Human bones, unburnt, were piled in disorderly fashion against the walls on all sides. How many individuals may have been present is uncertain. A shipment of bones from the mound, forwarded by Mr. Shippee, has been made available for study at the National Museum; Dr. Stewart's observations thereon have been presented in the appendix to the present report.

Cultural material included a pile of unworked fresh-water mussel shells, which lay near the southwest corner; apparently none of these were preserved. There were also two or three small cord-roughened sherds and a heavy stemmed arrowpoint. Of more interest are two pottery vessels reconstructed almost wholly from sherds found among the bones. There is doubt as to the position of the sherds other than that they lay near the back wall of the chamber—probably one group near the northwest, the other toward the northeast, corner. The smaller of these pots (pl. 37, *b*) is 12 cm. high with a maximum body diameter of 11.5 cm. In shape, it has a round body, constricted neck, and a flaring rim. In profile, the rim is channeled interiorly, and culminates in a flat horizontal undecorated lip. Color varies

from light buff at the bottom to dark gray; the paste is dark gray with small angular white inclusions of siliceous matter sparingly present. The rim exterior is crisscrossed with fine incisions, below which is a zone of small punch marks each deepest at the left end as though applied obliquely from the right. The neck, imperfectly polished, is 25–35 mm. wide, bordered at the lower edge by an incised line. Body decoration consists of three bands of fine smooth edentate rocker impressions encircling the vessel. The base is plain and smooth.

The second vessel (pl. 37, *c*) stands 13.3 cm. high, with a maximum body diameter of 13.8 cm. The body is rounded vertically but in horizontal cross section presents a squarish outline with rounded corners (Wedel, 1938, pl. 8, B). Color, paste, and inclusions resemble those in the smaller pot. The lip is flat with an inward bevel, and the channeled rim has incised cross-hatching with a bordering lower row of shallow flat punch marks. The neck is plain and imperfectly polished, and on the squared sides the undecorated zone extends down to the base. Each of the rounded corners or lobes is marked off by a shallow incised line within which the bulging surface has been covered with four short bands of edentate rocker impressions. The impressions in these four separate units are less carefully done than those on the first pot. As already implied, the base is smooth.

There is no reason to doubt that these vessels were found in the mound, as stated, but whether they were intrusive or inclusive is a question no longer susceptible to direct proof. They differ in all particulars from the five specimens found, probably intrusively, in Nolan C, but in form they recall the smallest pot which I regard as inclusive in that mound (cf. pl. 36, *a*, and 37, *b*, *c*). Deferring for the present a discussion of their possible significance in terms of archeological correlations, we need merely note here that they vary in minor respects only from the best grade of ware represented at the Renner site (cf. pl. 8, *a*).

Other remains on Pearl Branch.—Aside from the mounds that we investigated a few other remains in the valley and immediate vicinity of Pearl Branch may be noted. Somewhat to our surprise, surface hunting disclosed few evidences of extended habitation by a people or peoples to whom could be ascribed the bones and artifacts taken from the hilltop tombs. As already indicated, habitable well-drained and flood-free flats of sufficient size to accommodate more than two or three lodges are lacking along the creek, and the valley slopes seem generally too steep to have been so utilized. Still, there is a possibility that some of the spots now occupied by residences, farm buildings, and small gardens were once lived on by aboriginal man whose traces have since been obliterated. At least one spring and

several small seeps were visible along the creek banks in the summer of 1938. Under primitive conditions, before large scale agriculture exposed the soil above to excessive erosion, these doubtless yielded enough water to have supplied a limited Indian population. Maize, beans, pumpkins, and other food plants could certainly have been grown here under favorable soil and moisture conditions.

There is evidence that at least one earthlodge formerly stood a short distance from the spring and just west of a small modern rock quarry (fig. 12, A). Here, following a "gully-washer" one evening, we found potsherds, chipped flints, bits of charcoal, and burnt clay with grass impressions—the latter usually a good clue to house sites. A little digging showed that these remains occurred to a depth of fully 18 inches, though we were not able to locate a definite house floor. Subsequently Mr. Shippee has made more extended excavations. He reports (letter of Jan. 15, 1940) a rather surprising abundance and variety of remains underground. These include sherds "mostly of a mottled buff and gray color, the gray often being very dark. The paste was a light gray but it has been burned to the buff color in the firing. Loop handles, shouldered body, recurved rims, and incised straight line designs are typical. The designs are below the rim on the upper body. Sherd No. 6 . . . is of a fine grit and sand temper but it is hard, dark gray, and partly polished and the workmanship is similar to what I observed at Steeds [i. e., Steed-Kisker site] . . .

"In piecing out the sherds, I find that I have seven or eight pots represented, most of which were rather large vessels. I have estimated the rim diameter to have been about 7 inches and the bodies 14 to 16 inches. One body sherd measures $17\frac{1}{2}$ inches along the arc of the circumference. . . . Most body sherds are a quarter of an inch or less in thickness. The rims are usually heavier. While only one sherd shows shell tempering, I believe that it was used in nearly all of these pots but has leached out. . . . One small sherd of a hard cord-roughened ware was definitely grit tempered.

"The flintwork was poor and nearly every flake picked up showed some secondary chipping. It seemed to be of a makeshift character. . . .

"Sandstone abraders were [abundant] but were mostly irregular in shape. Several hammerstones and a metate all of quartzite were found. . . .

"A basin-shaped pit, the bottom of which was 30 inches below the surface and 18 inches below the general mixture, contained in the bottom a hard mixture of ashes and trash. Sherds, abrading stones, and flint flakes were mixed in it but lying in one mass was charred fiber, withes, mud-dauber's nest, and a $\frac{5}{8}$ -inch corncob. From the 10-

to the 20-inch levels there was a compact area of wattle, some pieces of which are 5 inches in diameter and show the leaf and grass impressions quite plainly. Large body sherds were mixed with this wattle. A part of rim 6 came from the bottom of this pit and is much darker than the pieces from near the surface. No bone work was found, but a few charred scraps and what I believe is a human mastoid were uncovered.

"I could detect no postholes nor a floor. I think this area is a midden and that farther up the slope may be found a lodge floor. . . . Fifty feet to the northwest at a depth of 3 feet a fire-reddened area is exposed in a wash. Limestone slabs are associated with it. Here in 1938 we found our specimens."

Sherd No. 6, mentioned in the passage quoted above, was forwarded to the National Museum. A careful restoration, based on projection of vertical and horizontal curvatures, resulted in the specimen illustrated in plate 38, *a*. The original sherd, whose polished surface shows pitting due to leached shell fragments, has two parallel horizontal lines immediately below the lip; the zone between the parallels and the rounded shoulder is filled with carelessly incised lines tangent to the orifice. As restored the vessel has a height of 14.6 cm., a body diameter of 18.3 cm., and an orifice of 8 cm. While it differs somewhat in shape from vessels included in our own findings (cf. fig. 10), the lip and adjacent upperbody are strongly reminiscent of certain rim fragments from Steed-Kisker, which I tentatively ascribed to a lidless form resembling the kiva-jar of the Southwest.

Shippee's findings on the bank of Pearl Branch, so far as they go, tally with ours at Steed-Kisker, and I think his assignment of the remains to the same archeological horizon is justified. Moreover, I am of the opinion that he is probably on the trail of a definite habitational unit, though from the pronounced slope of the hill it looks as if the natives picked a singularly awkward site. In any case, it still seems highly improbable that village remains of any great areal extent or vertical depth exist along Pearl Branch. On the basis of present evidence it would appear more plausible to regard Shippee's discoveries as indicative of the presence of one or several house units, which in the latter event were very likely scattered here and there on suitable spots each of relatively small extent.

The floor of the Missouri Valley vicinal to the mouth of Pearl Branch valley is mostly low-lying and in wet weather becomes extremely muddy. Terraces are wanting, and there are few elevations high enough to appear at all inviting from the standpoint of permanent human habitation. Along the foot of the bluffs, to or beyond the town of Waldron, there is some evidence of a low narrow outwash slope, which is much better drained than the bottoms. If prim-

itive man ever built on this strip, the prospects for recovering his remains are dim indeed. The same considerations that would have attracted him—better drainage and safety from overflow—have prompted his white successor to lay out roads, railway grades, and buildings thereon. A short distance south of the railroad bridge over Pearl Branch, where the Parkville road (Missouri 45) branches eastward to leave the Missouri bottoms via a small nameless creek valley, the outwash area is larger but it showed no sign of village debris. Such evidence, in fact, was forthcoming at but one point outside of the Pearl Branch embayment. This was on a low inconspicuous rise north of the place where the creek issues from the bluffs, east of the highway and about 400 yards west of Babcock Mound A (fig. 12, C). Here, on cultivated rain-washed ground, we found shell-tempered plain and incised sherds, a few others with grit tempering and cord-roughened exteriors, small arrow-points, scrapers, flints, and lumps of burnt grass-impressed clay. Bits of this wattling clay, charcoal, and flint chips occurred below plow sole to a maximum depth of about 12 inches underground. Quite possibly a small earth-lodge settlement once stood here, though the evidence we saw was insufficient to warrant large scale excavation. It is interesting to note, however, that the two pottery types represented here are the same ones found by Shippee at sherd area A (map, fig. 12), and by us in the mound (Babcock A) on the ridge to the east and also intrusively in Nolan C.

THE YOUNG MOUND GROUP

Four and a half miles northwest of Parkville the attractive Brush Creek Valley opens out onto the flood plain of the Missouri. About a quarter mile up the smaller valley the uplands on the west thrust a narrowing spur southward. To the east is a timbered slope, which falls away sharply to a fine alluvial terrace on the right bank of the creek. On the west is a short canyon beyond which a higher ridge conceals the Missouri River. The stream, about 1,200 yards distant, is visible to one looking southeast from the spur.

In May 1938 the crest of the spur was almost wholly under cultivation, with exception of the extreme southerly tip overlooking the farmstead of the owner, W. W. Young. Two mounds, both considerably dug in preceding years, were in a field of growing grain and could not be examined; a third shared with Mr. Young's hog-house a sort of shelf at the end of the ridge. When first seen this mound appeared as little more than a pile of jumbled stones about 25 feet across by 30 inches high. A small pit in the top, according to the owner, was due to his efforts to quarry rock for building purposes. The stones proved unsuited to his intended use; besides they "stood on edge" and the deeper he dug the more firmly they seemed to be

wedged in place. Convinced that the pile was part of a natural outcrop, he thereupon abandoned it to the hogs. Our suggestion that the mound had probably been raised by Indians was viewed askance, but permission to dig was soon granted. In this work the writer was assisted by J. M. Shippee and H. M. Trowbridge.

The limits of the disturbed area were readily determined owing to the softer fill and to the presence of sticks and other extraneous materials. These, when removed, left an elliptical basin nearly 8 feet long by 3 or 4 feet wide, with a maximum depth of about 30 inches; the long axis lay east-west. At each end was exposed a short section of dry wall. These were next traced out and were found to enclose a subrectangular area, 8 by 10 feet, with rounding corners. In the undisturbed northern portion of the enclosure, the upper 12-18 inches of fill was a dark humous loose-textured soil containing a few limestone boulders. Other soft fire-reddened stones, presumably thrown or fallen in, were encountered in considerable numbers below the humous topsoil. At the south end they appeared to have been piled to within a foot of the surface against the inner end of a narrow walled passageway. In the northeast quarter of the chamber there was evidence of an intensely hot fire at the 17-inch level, below which the fill had been burned a brick-red color to a thickness of nearly a foot. Less marked indications of similar burning occurred at 20 inches in the northwest quarter. A few small bits of charcoal were observed but no ashes.

Under the burnt and rock-laden soil was an 8-inch layer of dark earth practically devoid of charcoal, stones, or other foreign matter. This rested directly on undisturbed olive-colored clay on which the lower course of wall slabs had been laid. A scant 6-8 inches beneath this clay surface a test hole exposed what we at first took to be a flat carefully laid floor of limestone flags. Further investigation showed that this rock layer maintained a remarkably even surface beyond the mound limits to the north and south, from which we concluded that it represented a natural stratum of tabular limestone.

The walls of the enclosure were only moderately well laid up; they were seldom plumb, and there had apparently been no serious attempt at securing stones of uniform thickness. In consequence there was nothing like continuity of courses from one wall to the next. Maximum height of the wall, at the north side, was about 40 inches. At no point did we break through to determine the details of construction, but short drifts run in from the north, east, and south sides indicated that the base of the walls at these points averaged slightly over six feet in breadth. This would give the original mound a maximum diameter of less than 24 feet.

A passageway 18 inches wide opened just east of south out of the end of the chamber. The east side was walled to a distance of 4 feet; on the west side the wall ended about 7 feet from the chamber. It is noteworthy, though probably of no particular significance, that

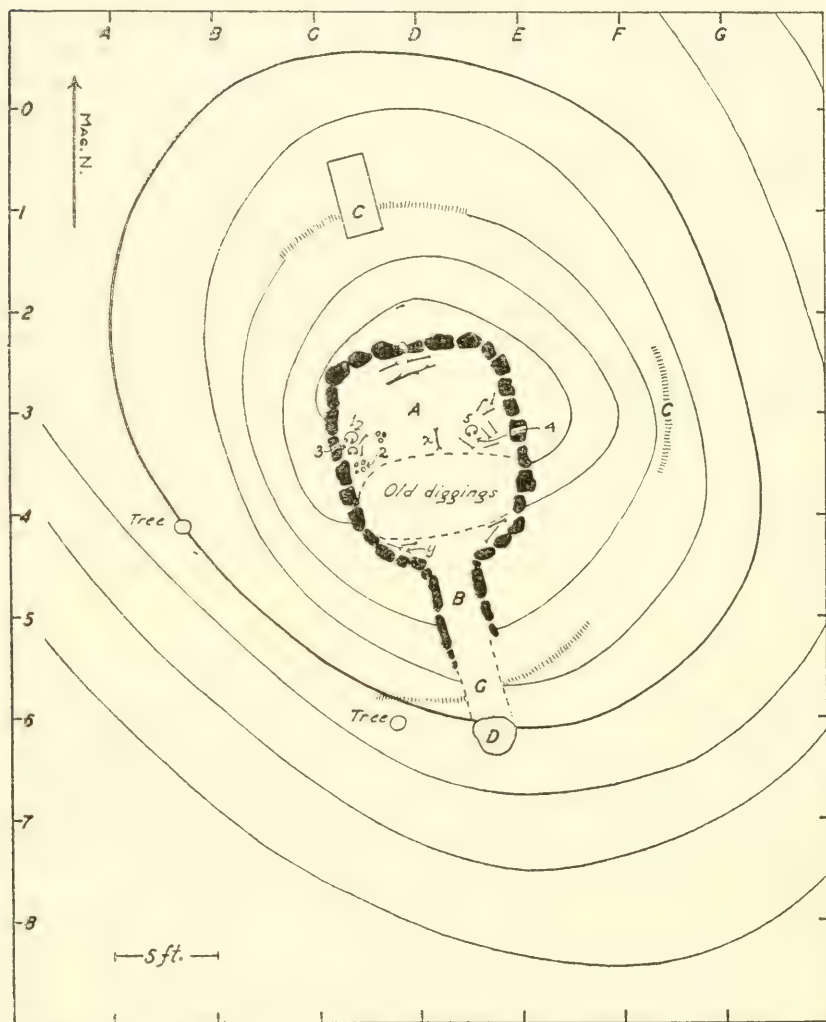


FIGURE 16.—Contour map of Young mound 1, showing position of burial chamber, A; passageway, B; limits of mound, C; step (?) slab, D; human crania, 1-5; and pathological long bones, x-y. Contour interval 6 inches.

nearly 6 feet of the west passage wall consisted of two huge slabs set on edge, beyond which were smaller coursed stones. During our explorations no other burial enclosure was found in which the stones were thus placed edgewise. Eight feet from the chamber, beyond

the passage walls but exactly across the line of the entrance, lay a large flat slab 18 inches in diameter and 6 inches underground. Aside from its position, which at first suggested a stepping stone, there is nothing to indicate conclusively that it was a part of the burial structure. The floor level of the passage was traced with some uncertainty to the slab, where it was still about 12 inches deep. The slab, lying about half as deep, could thus have been placed for convenience in getting in or out of the door.

Our tests disclosed the fact that the clay subsoil at the north edge of the mounded stones, on which the outer margin of the wall rested, was only about 9 inches underground. The flagstonelike limestone stratum was almost 24 inches deeper, though, as already indicated, it lay only 6 or 8 inches beneath the base of the inner chamber wall. Since the mound had been erected at the edge of the hill, it is likely that the soil surface sloped toward the south over the spot selected for the tomb. Projection of the clay subsoil surface southward through the mound shows clearly that a pit had first been dug to within 8 inches of the underlying rock stratum. With reference to the subsoil surface the floor of this pit was fully 18 inches deep at the north (uphill) side of the chamber and 9-12 inches deep on the south. If to this we add 6 inches for topsoil, the true original depth of the pit in which the tomb had been built approximated or exceeded 24 inches on the north and 15 or 18 inches on the south.

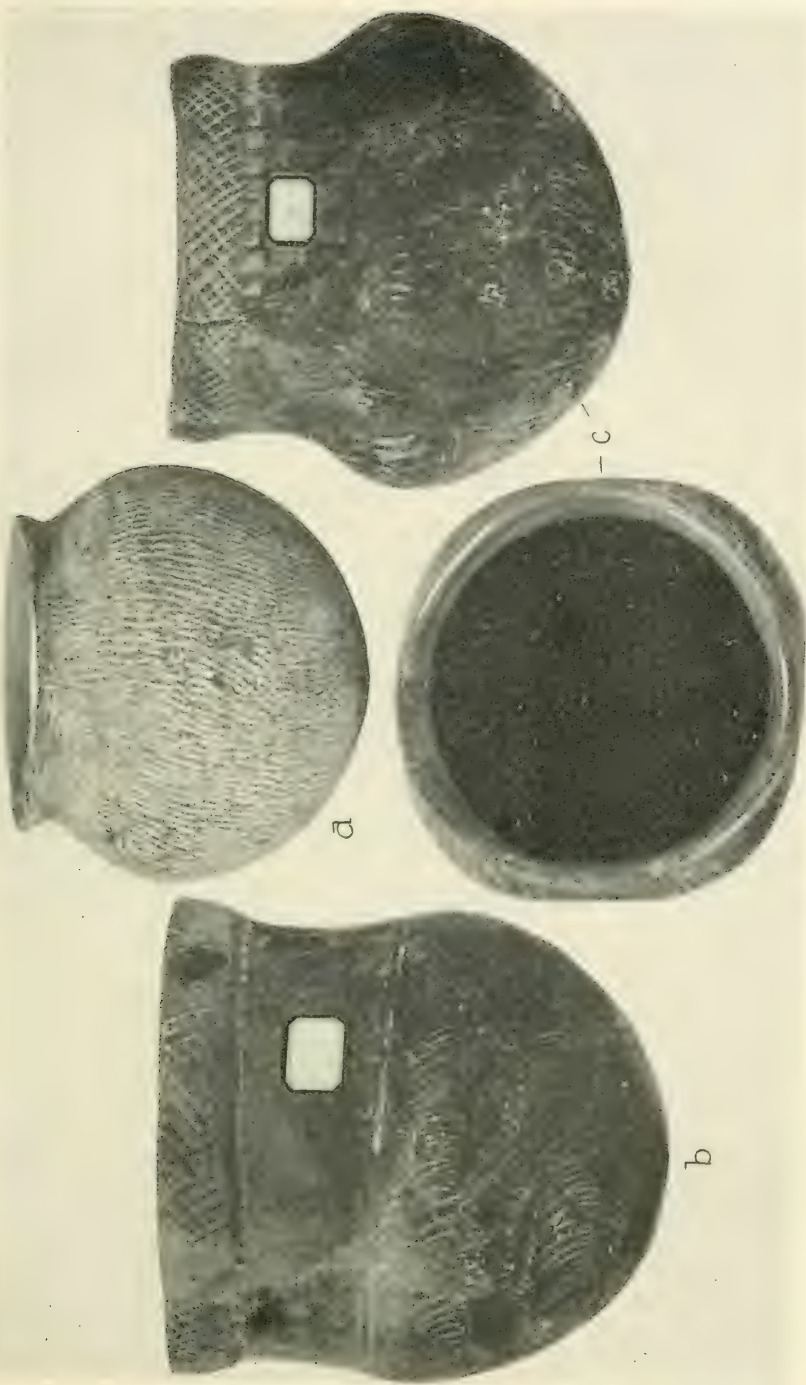
From the disturbed fill in the chamber came two pieces of human bone and a very small plain grit-tempered sherd. Another similar sherd, equally unenlightening as to cultural connections, was found in situ in the passageway. Of more interest were the materials recovered from the portions of the enclosure that had not been turned over prior to our work. These included incomplete and fragmentary skulls and long bones from at least four or five individuals. All were found at or just above the zone of contact between the lowermost dark earth layer and the thicker burnt rock-filled middle stratum. Skulls 1, 2, and 3 lay close to the west wall, along with several arm bones, ribs, and innominate bones, and an unworked mussel shell. No. 1 was surrounded by fire-reddened stones, but itself showed no evidences of burning. Parts of No. 2 were calcined, but No. 3 was unburned. Nos. 4 and 5 were near the east wall, lying in a disordered mass of other skeletal parts (fig. 16); No. 4 was scorched and fragmentary, whereas No. 5, immediately below, was unburned and nearly complete. A few limb bones and rib fragments were found in the narrow strip of undisturbed fill in the southeast and southwest corners. Near the center of the chamber, more or less isolated, was a tibia exhibiting pathological conditions; a similarly abnormal femur shaft lay in the southwest corner. Close examina-

tion of the soil surrounding each of these two specimens showed no signs of disturbance, and there is no reason to believe that they were late additions or intrusions into the tomb. Along with the other bones collected, they are described in another section of this report.

Among the bones recovered were several since identified as dog (*Canis familiaris*). All appear to be from one skeleton, suggesting that the whole animal had been placed in the structure. Unfortunately my notes do not indicate whether they are from the disturbed part of the mound. All are of a dark red-brown color, quite different from any other bones taken out of the local sites. It is possible they represent an animal buried in comparatively recent times and thus have no connection with the people who built the tomb.

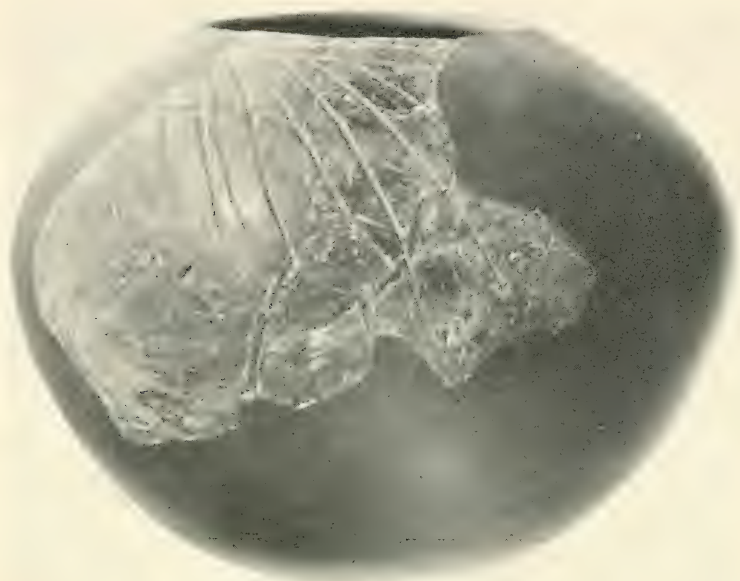
By agreement with the owner we were to leave the structure intact following completion of its opening. This fact prevented detailed examination of a section of the north wall, which evidently had been disturbed a very long time ago. This disturbance, which had affected the wall to a depth of 24 inches and over a horizontal distance of 38 inches, began about 30 inches from the northwest corner. Crudely coursed stones underlay this section and began again at either end, contrasting sharply with the disorderly position of rocks in the old break. A few fragments of bone protruded from the interstices, suggesting the possibility of an intrusive burial or burials farther in. This situation, reminiscent of that at Nolan C, might be worth checking at some future date.

The tomb just described has been designated Young mound 1. Nos. 2 and 3, proceeding in order up the ridge, were not subjected to thorough examination, but No. 2, at least, was very likely another stone enclosure. As to the location of a village site in the vicinity we have little to offer. It should be pointed out, however, that Mr. Young's son turned over to us a handful of sherds plowed up in the valley bottom just east of the mounds. Most were hole (shell) tempered, with low rims and incised decoration. One rimsherd with channeled profile bore cross-hatched incisions and small punch marks; another sherd was rocker-roughened. The hole-tempered fragments, together with several small triangular and notched arrowpoints, resemble material from Steed-Kisker. On the other hand, the cross-hatched rim and rocker-marked sherd, along with several large stemmed points, large skinning tools of chert, and a polished celt, are reminiscent of the Renner site materials. Our own brief surface hunting netted grit-tempered cord-roughened and plain sherds, small arrowpoints, scrapers, knives, and wattling clay with grass impressions. From the standpoint of topography, shelter, water, and other natural resources, the terraces along Brush Creek offer many desirable sites for native habitation, and a thorough examination would un-

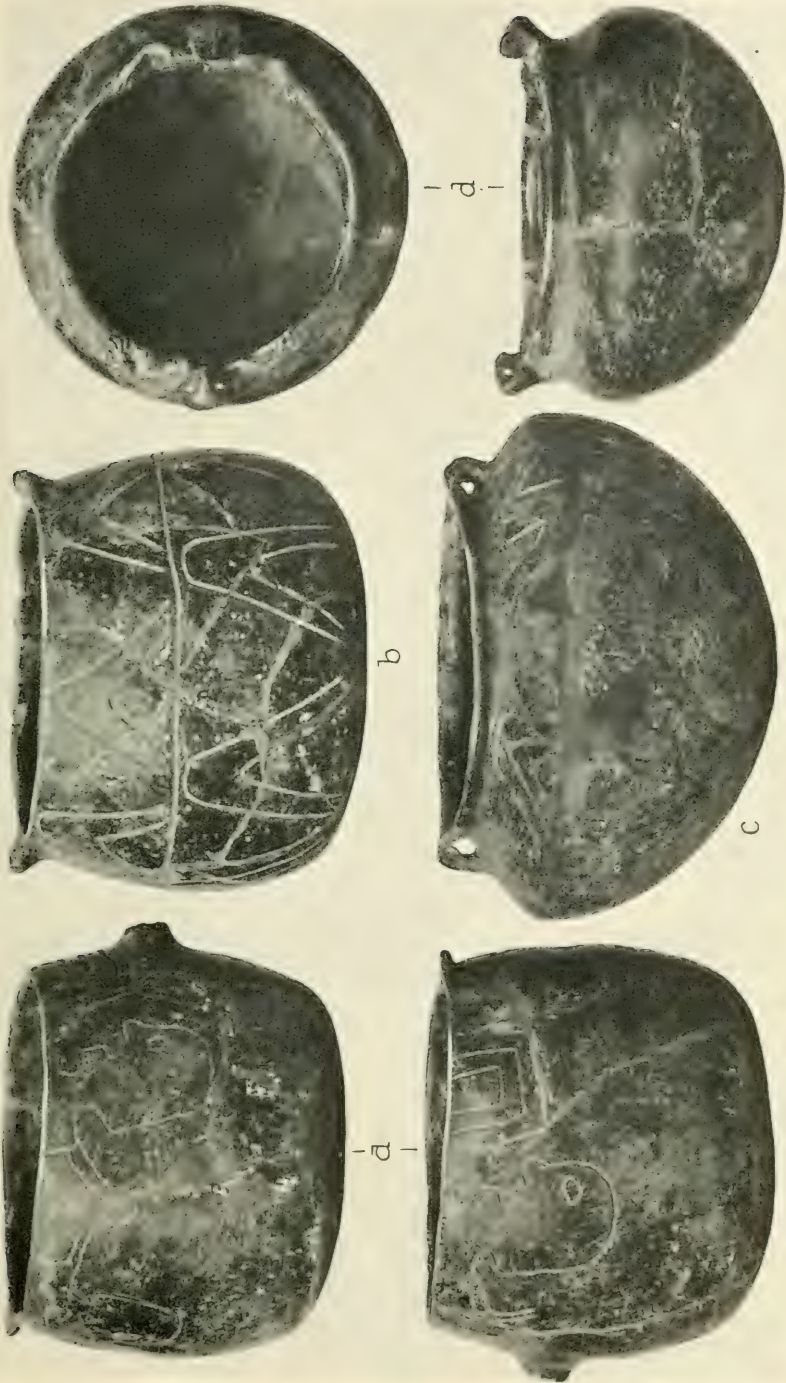


POTTERY VESSELS FROM BABCOCK MOUNDS A AND B.

a, From Babcock mound A; *b*, *c*, from Babcock mound B; *b* and *c* by courtesy of A. H. Hansen.

*a**b*

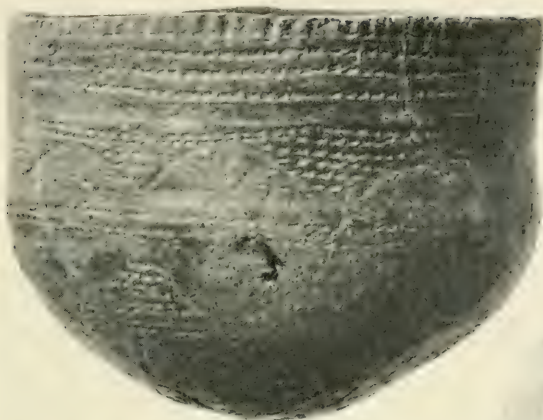
a, Vessel reconstructed from sherd found on Pearl Branch (see fig. 12, A, for location); *b*, Shepherd mound, near Smithville, Mo., after partial removal.



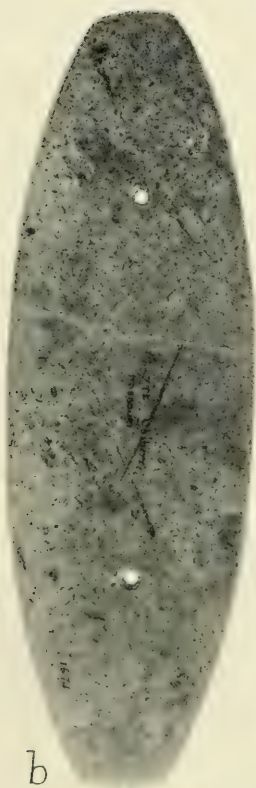
POTTERY VESSELS FROM SHEPHERD MOUND, NEAR SMITHVILLE, MO.



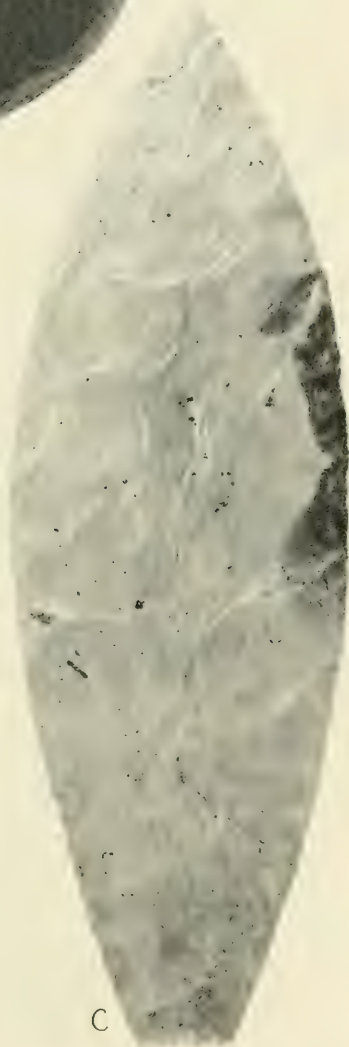
POTTERY VESSELS, STONE PIPE, AND BLADES FROM SHEPHERD MOUND, SMITHVILLE, MO.



a



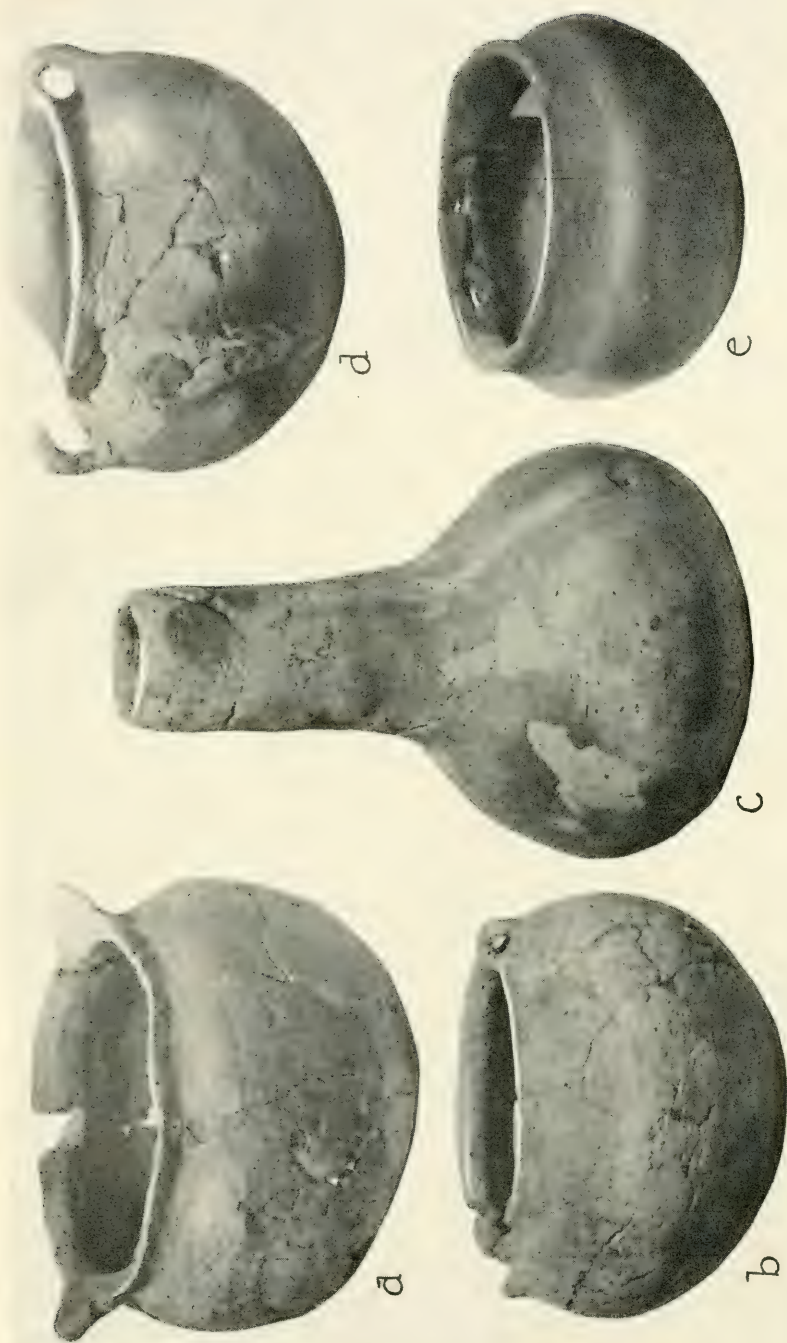
b



c

POTTERY VESSEL FROM RENNER MOUND; GORGET AND CHIPPED BLADE
FROM RIDGE WEST OF RENNER VILLAGE SITE.

Courtesy of J. M. Shippee.



POTTERY VESSELS FROM SOUTH MOUND NEAR AVONDALE, MO.
Courtesy of J. M. Shippee.

doubtedly show that some were so utilized. The few specimens that came to our attention suggest that at least two different groups may have been in the valley, but whether both had villages here cannot be stated from the evidence at hand. Likewise, it is impossible at present to say with certainty what particular group erected the burial mounds at the Young site.

Earth Mounds

SHEPHERD MOUND

Some weeks after the close of our 1938 excavations in Platte County, I was informed by Mr. Shippee that a large mound near Smithville had been recently opened by two young men. The methods employed, beginning with a tractor and slip and apparently utilizing no tools smaller than pick and shovel, had entailed the loss of much important information as well as of most human and cultural materials not seen intact by the diggers. The remarks that follow are based on brief observations by Mr. Shippee and myself made on a hurried visit to the mound on September 9 and 10. More than half the mound had been razed at the time, but lack of funds and time prevented our taking advantage of the owner's stated willingness to let us make a thorough study through excavation of the remaining portions. A small collection of pottery, stone artifacts, and badly broken human skeletal remains, said to have come out of the mound, was acquired for the National Museum through purchase.

The mound was situated on a high point, owned by J. C. Shepherd, about $1\frac{1}{2}$ miles west by north of Smithville, and about a quarter of a mile west of the Platte-Clay County line (fig. 1). To the east is a deep canyon; on the north and west, about a third of a mile distant, the Little Platte River curves past to empty into the Platte $4\frac{1}{2}$ miles due west. The valley is well timbered, bordered by irregular bluffs, and exceedingly pleasing to the eye. Northwest of the mound the river now flows close to its right bank, but a winding marshy strip indicates that at a time not long past the current swept along the foot of the promontory capped by the mound. The nearest terrace on which a village site might be searched for is three-fourths of a mile northeast across the river. Lying at an elevation of 880 feet, the mound is about 100 feet above the valley bottom. The Steed-Kisker site is 14 miles to the southwest, airline; the Renner site lies about 15 miles due south.

In diameter and height the Shepherd mound (pl. 33, *b*) exceeds any other artificial tumulus of aboriginal origin seen by or reported to the writer in northwestern Missouri. The circular base, occupying most of the available hilltop, was approximately 90 feet in diameter. The

sides rose sharply to a height of 9–10 feet. On the basis of previous visits, Shippee states that the summit was more or less flattened over an area about 25 or 30 feet across; near its center were traces of sporadic digging done many years ago by present residents of Smithville.

Owing to the slipshod methods of recent excavation and to slipoff, no satisfactory profile extending entirely across the mound could be obtained. Near the crest at time of our observations, which is probably past the original midline, the uppermost 30–40 inches consisted of a fine gray homogeneous soil stained by decayed grass, tree roots, and other vegetation (fig. 17, I). Below this, differing markedly in color and texture but not set off by a clearly defined cleavage surface, was a layer of tough compact yellow-brown joint clay, averaging 36 inches or more in thickness (fig. 17, II). This graded downward into another stratum, about 36 inches thick, of dark-gray compact earth through which were scattered fragments of charcoal, burnt clay, and flint chips (fig. 17, III). Here the color was much darker than that

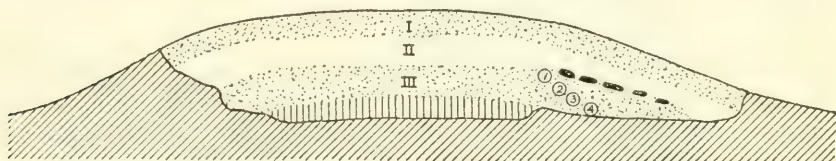


FIGURE 17.—Cross section of Shepherd mound near Smithville, Mo.: I–III, Soil strata; 1–4, burials; see also p. 138.

near the mound surface, owing in part to a higher moisture content and in part to an apparently heavier concentration of organic matter. Here and there we noted differentiated pockets and small lenses of soil, evidently the result of "loading." I am inclined to suspect that the original surface of the hilltop was perhaps represented by the lower part of this zone, though we were not able to distinguish either an earlier sod line or a clearly marked prepared base. None of the mound dirt was recognized as of valley bottom type; presumably it was scraped up from the hilltop and along the ridge extending toward the south. Clean undisturbed and unmixed light colored subsoil was encountered at a depth of 9 or 10 feet below the summit of the mound.

At the south end of the profile, where all the strata curved evenly downward, a discontinuous line of slabs was noted along the contact between layers II and III. These were traced for about 15 feet or slightly more but were not in evidence below the mound crest nor in what we could see of the north side. From the abundance of stones of comparable size and form in the backdirt, it seems evident that they had formerly extended some little distance west of the line as we saw it. Whether they formed a sheathing over a special burial

area at the south side, or had formerly covered other separate spots in the destroyed portion of the mound, I cannot say.

The vague and not altogether satisfactory statements of Mr. Shepherd's son, who, with a neighbor's boy, opened the mound, indicate that most of the burials and artifacts were graded or dug out of the deeper part of the structure, probably layer III. With this in mind, Shippee and I smoothed off the face beneath the slab layer, where thin seams and lenses of light-brown moldy grass or bark were visible. Four of these were localized, all lying beneath the stones. No. 1 (fig. 17), partly cut away previously, yielded the crushed skull of a young child and traces of clavicles and humeri, with a shreddy layer above and below. Within the wrappings was a mass of red ochre with which the corpse had apparently been smeared. Nos. 2 and 3, similarly enclosed in shrouds, were even less preserved; only traces of soft bone remained, with nothing to show the size, age, or orientation of the burials. At No. 4 a mass of woven textile 3 feet below the slabs measured irregularly 12 by 25 inches. Removal was not feasible, but it was ascertained that the heavy grass or rush warps were held together at $2\frac{1}{2}$ -inch intervals by twined wefts. There was nothing underneath, from which we suspect that this must have been on the bottom of a grave. Probably some or all of the similarly wrapped skeletons had been enclosed in a woven fabric. From the relatively small space occupied by each bundle, flexion might be suspected. To judge from the wreckage scattered over the dug surface a considerable number of graves had been destroyed in the grading, but no description could be gotten. Parenthetically, it may be added that specific inquiries on our part as to grave wrappings with interments previously exposed elicited only a negative answer, despite the fact that they were unquestionably present and easily detected on the only four graves actually seen by us.

One more feature remains to be noted. Near the center of the profile, $8\frac{3}{4}$ feet below the mound summit, was a horizontal brown streak 1 inch thick and about 8 feet long. This showed an unquestionable woody structure, though whether it was a split log or a hand-hewn rough plank is not certain. It lay in about the middle (vertically) of layer III, and from the south end a light dustlike streak continued for at least 10 feet toward the mound edge. It is possible that this indicates the original ground surface on which the first burials were laid and over which the earth was finally mounded.

There is no reliable means of determining how long ago this mound was erected, but the evident absence of materials indicating white contact would establish a minimum dating of at least three centuries. That uncarbonized rush matting would survive even this long in the fairly wet climate of the locale seems a little unusual, but probably

the position of the burials near the bottom of a well-drained and compact mound were sufficient. Very likely drainage was even better when the mound was younger, since a decrease in height with subsequent expansion of the area covered would doubtless result with passage of the years. That the age is probably still greater is suggested by the fact that the proto-historic Indians of the locality were not mound builders, nor did they produce artifacts such as those said to have been taken from this structure.

The artifacts, which young Shepherd assured me were all taken from this one mound and which are now the property of the National Museum, are of considerable interest. They include seven restored pottery vessels of diverse sizes and shapes, a few odd sherds, a stone pipe, and about a dozen miscellaneous chipped flint and other specimens.

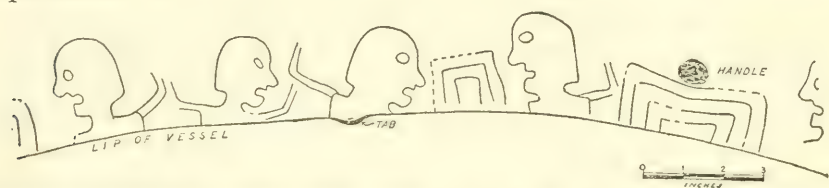


FIGURE 18.—Incised design on pottery vessel (U. S. N. M. No. 381551) from Shepherd mound.

Outstanding among the vessels is the bowl shown in plate 39, *a*. Dark gray in color, with nearly flat base and bulging sides drawn in at the lip, it stands 12.5 cm. high and has a diameter of 15.8 cm. The surface, which is generally polished, has pittings evidently caused by leaching of shell fragments. Walls average 5 mm. or less in thickness; the lip is rounded and plain, and at one point a flat, rounded tab projects horizontally. On the opposite side, about 4 cm. below the lip, is the stump of a solid cylindrical handle slightly over a centimeter in diameter. Rudely incised decoration is confined to a zone 6 cm. wide encircling the bowl directly under the lip. Beginning above the broken handle, there is first a series of four rectangles, one within another, with the vessel lip forming the fourth side of each. Eight and a half centimeters away is another smaller series of three in similar relation to each other and to the lip. Between these two groups, looking across the smaller, is the head of a human figure with one arm upraised at the rear. Facing this personage are two others; the first has one arm, the second both, uplifted. A fourth figure has turned its back on these two and, with one arm up, looks over the larger set of rectangles at the back of the first individual. Each has the mouth open, and the whole scene suggests, in caricature, a lively altercation or a free-for-all moment in a primitive court of justice. Figure 18, from a rub drawing, shows it in full and in all its crudity.

Similar in shape but with more convex sides is the specimen in plate 39, *b*. The color varies from dark to light gray, the darker areas being polished. A trifle larger than the other, it is 12.7 cm. high by 16.2 cm. in diameter, although the interior of the orifice (12.2 cm.) is slightly less. Two thickened rounded tabs rise up and out from the plain lip on opposite sides of the bowl. A deeply incised line encircles it 4.5-5 cm. below the lip. Above this are seven pairs of inverted broadly V-shaped incised units, the point of each being 3-5 mm. below the lip. Another series of similar elements occurs below the midline, each lying directly below an interval between successive units in the upper row. None of the V's intersect with the midline, and the lower ones end where the vessel walls begin to curve sharply in and under for the base.

The jar in plate 39, *c*, recalls the larger ones believed to be characteristic at Steed-Kisker. The present example is 12 cm. high, with diameters of 18 and 12.5 cm. at shoulder and neck, respectively. The surface, though thickly pitted, shows some evidence of a former polish; it is mostly dull gray to buff in color. Between shoulder and neck is a rudely incised zone comprising 11 double-line inverted V units much like those on the preceding vessel. There is some suggestion of an undulating discontinuous bordering line along the upper edge, so placed that its sinuosities create the effect of a third broad V or U over each unit. On opposing sides, two small loop handles rise from the low recurved rim to fasten again on the upper body below the neck.

In plate 39, *d*, is shown a well-polished dark pot with finely pitted surface and light gray paste. The hemispherical underbody culminates in a rounded shoulder; the neck is constricted and the rim flares outward slightly. Two modeled humans face upward and inward across the jar from opposite sides; each has an effigy head with pronounced aquiline nose, in one case with the nostrils indicated and deep punch marks for the mouth and eyes. Beside each the vessel rim has been manipulated by pressure and incising so that the bent arms extend on each side along the lip with the fingers spread loosely. Each hand has its full quota of five digits. The illustrations (pl. 39, *d*) may help to clarify the nature of this feature, though the vertical view unfortunately does not bring out all the details. There is no other decoration. As to dimensions, the vessel stands 10.2 cm. high with a body diameter of 15.6 cm. and a neck of 11.8 cm.

A rougher pot of about the same size, which must nevertheless have been well polished at one time, is that in plate 40, *b*. This is dark gray in color, but where scaling or abrasion has taken place, as on the base, a light buff paste with shell inclusions is visible. The darker surface appears to be a polished slip, as probably also in most of the other better jars from the mound. There is no distinct neck, the rim

rising as a low ridge from the plain upperbody. A small crude loop handle on one side has been balanced in the restoration with one on the opposite side. Like the preceding jar, this shows striations from the rubbing tool on the inside upper surface. It is 9.2 cm. deep with a diameter of 14.8 cm.

Smallest in the series is a plain rough little jar 6.9 cm. high by 11.6 cm. in diameter (pl. 40, *a*). The surface is uneven and looks as if it had been brushed with grass or twigs, but it also shows polish. The shoulder varies from round to angular. There is no definite rim; in places the lip seems to have been flattened so that its thin sharp outer edge slightly overhangs the body. Decoration is lacking, and the interior is much striated horizontally.

In marked contrast to the six vessels just described, with their shell or cell inclusions, mostly smoothed slipped exteriors, dark gray surface color, and light walls, is the seventh piece. Globular in form, it somewhat resembles a pear from which the smaller stem end has been cut (pl. 40, *c*). Surface color is prevalently a brown, but here and there dark gray to black firing clouds occur. Starting at the rim, heavy cord-impressions run vertically down the sides; at the base these frequently crisscross. The lip itself is rounded, smooth, and uneven. Vessel walls exceed 5 mm. in thickness, and the jar, though not the largest in the group, is the heaviest. Surface pitting, discernible on all others, is almost lacking here; where present, cavities are larger and angular as though gravel rather than shell fragments had produced them. No inclusions are visible on the surface, nor are there open breaks from which their nature, if present, may be judged. The pot is unevenly turned; it approximates 14.8 cm. in diameter by 13 cm. in height, and the orifice varies from 9–9.5 cm. across.

During our short inspection we collected a few sherds that tally in all particulars with the thin slipped shell-tempered ware described in foregoing paragraphs. Some were in situ, others scattered over the dug portions. While none exhibited decoration or could be restored, they confirm the presence of the ware inclusively in the mound.

The pipe in plate 40, *d*, is of compact slate-gray limestone. The base, squarish in cross section, is 6 cm. long and projects beyond the bowl. Cylindrical, the bowl is 2.8 cm. in diameter by about the same in height. It is surmounted by a flat circular disk 6 mm. thick, 5.9 cm. in diameter, depressed very slightly toward the center. The stem hole, presumably for insertion of a wooden bit, is 1 cm. in diameter at the outer end, and conical. The bowl cavity, 15 mm. across at the top, tapers much more gradually; the "cake," which it is said to have held when found, was thoroughly removed before the pipe came into our possession. Part of one edge of the disk is somewhat

scaled and the specimen has been mended and restored, but undoubtedly with complete accuracy. There is no ornamentation.

Additional artifacts included about a dozen chipped flints, a piece of red sandstone evidently used for rubbing, a piece of hematite, and a cube-shaped lump of galena. The best of the chipped material were the two blades in plate 40. The larger, *f*, is of cream-colored chert, very light in weight and fragile. The edges, in addition to being retouched, have been worn or ground down. It measures 13.8 by 5.1 by 0.7 cm. The smaller, *e*, is of gray chert, thicker and less skillfully retouched. It is 10.2 by 3.3 cm. The remaining objects, which do not merit detailed description, include two snub-nosed end scrapers, the basal parts of two stemmed arrowpoints, and several broken knives perhaps from specimens similar to the two illustrated. There is no obvious reason for questioning the occurrence of any of these in the mound, but we did not collect any fragments in situ as we did of the pottery.

We were repeatedly told that everything came out of the mound, as perhaps it did. As any field worker will bear witness out of his own experience, however, there is always a certain reluctance to accept blanket statements where significant inferences are likely to be based on material collected as the present series was. With the untrained amateur, the arrowhead found on the field across the fence all too often goes into the shoebox containing sherds and flintwork from a razed mound, house site, or other localized spot, when the two actually should have been carefully segregated. While there must always be a residual element of uncertainty in the present situation, I am of the opinion that the pottery at least can safely be ascribed to the mound, the flints perhaps with rather less sureness. Whether peoples other than those who deposited this pottery also left their remains on the hilltop, so that some of the artifacts and graves are actually earlier, contemporary but of alien origin, or perchance intrusive from a later time, are questions of absorbing interest but, regrettably, without an answer.

RENNER MOUND

Westward from the terrace occupied by the Renner village site the ground rises rapidly to a timber-clad ridge. Where this culminates in a promontory overlooking the Missouri bottoms to the south and the Line Creek Valley to the east, about 450 or 500 yards from the village site, is a large mound about 6 feet high and 60 feet in diameter. This was opened in 1920, and again in 1934, by Shippee and Henne-man. Shippee states (letter of March 30, 1940) that "repeated efforts to determine the level at which the mound fill was begun failed, for after digging through the topsoil there was no apparent change

in the appearance of the loess that lay beneath. One would think the mound was natural but for the charcoal, flint chips, and hematite found even to depths of 5 feet. One test, on the north side, 10 feet from where the mound joins the regular contour of the hill, was dug to a depth 18 inches below the hilltop, and these foreign materials were found to the bottom of the hole. They were scattered as if gathered up and thrown on the mound with the earth of which it was built. In the excavation no postholes and no fireplaces were found, and the stone uncovered had been placed over the burials as if for a protective covering. One small bed of charcoal was found buried by several inches of earth. Quite a number of artifacts were scattered through the mound fill to the depth of 20 inches and like the flint chips and charcoal seemed to have been thrown in with the earth. The potsherds found were small and of the thick grit-tempered type. . . .

" . . . On the southwest slope of the mound erosion had uncovered some flat pieces of limestone which covered an area of 20 by 70 inches . . . [Beneath was] a burial which must have been placed at full length, east and west. A decided red coloring in the earth about the burial was noted. [With this burial was found a piece of galena weighing $1\frac{3}{8}$ pounds and a notched arrowpoint.]

"No more digging was done until May 1934 when . . . a trench 3 feet deep was started at the south edge of the mound and dug north for 10 feet. Nothing was found, so we decided to dig where the first burial had been found. Parts of that burial were dug out and then stones covering a bundle came to light. Not an artifact was found, and the skull was in very poor condition, while the only bones were those of the legs and arms. . . . We dug deeper and farther to one side, where I uncovered a fine white [chert] blade imbedded in very hard earth. It was lying horizontally, the point to the north and the west side raised to about 45° . There was no indication that it had ever been hafted. This blade [pl. 41, c] is $10\frac{1}{2}$ by $3\frac{1}{2}$ by $\frac{3}{8}$ inches. Its position in the mound was 12 inches east and 8 inches deeper than the nearest burial, and 20 inches from the mound surface. Three more bundle burials were found a few feet to the west of the first bundle and were similar to it in all respects. The skulls were full of loess and the thinner portions entirely missing. The lower jaw was usually intact. Very close to one skull was a drill but otherwise there were no grave offerings. A baby's bones were found in about the center of the burial area. Some bits of thin sheet copper were in this burial and had stained and preserved the bones to the extent that we ascertained that the burial must have been extended and in the flesh. A few vertebrae, a clavicle, a long bone, and part of the skull were saved. A few feet away the heavy portions of three

skulls were found 3 feet deep. With the exception of one more skull in the outer portion of the mound no more burials were found.

"A thick, grit-tempered, square-lipped vessel with pointed base was found 6 inches from the surface, sitting upright in the topsoil. It was 25 feet from the nearest burial. . . ."

The vessel just mentioned is illustrated in plate 41, *a* (see also Wedel, 1938, pl. 7A). It is 12 cm. in diameter and 8.8 cm. deep; the sides are 6-7 mm. in thickness. The paste is gray with gritty inclusions, which are visible on the surface. Color varies from gray at the bottom to brown or dun on the sides. The rim is square, the lip flat and undecorated. The exterior, immediately below the lip, bears short vertical impressions made with a cord-wrapped stick or cylinder. Below these are four horizontal lines of indentations, made with a roulette, and then comes a broad shallow groove. A series of bisected circles, each about 3.2 cm. in diameter, encircles the vessel at its greatest diameter; the circles are divided by two broad shallow parallel grooves between which are two lines of indentations. Above and below the circles are two or three lines of roulette marks, and shorter series of indentations occur between the circles. Below the circles short bands of indentations, each composed of four to six lines, run obliquely toward the base on the lower part of the pot which is otherwise plain.

Other objects from the mound included red and yellow ochre, hematite, pieces of pumice, scrapers, knives, three expanded base drills, 12 points (mostly stemmed), a crinoid stem, and grit-tempered sherds.

The mound described above appears to be the only one on the ridge, but broken and worked stone is scattered along the summit for some distance to the north. The polished biperforate gorget shown in plate 41, *b*, was found by Walter Larsen in his garden immediately west of and directly overlooking the Renner village site. Made of altered diorite, with a mottled greenish color, it is 20 cm. long, 6.3 cm. wide, and 1 cm. thick. Except for the fact that evidences of aboriginal human activity occur in some abundance at this point one might suspect that the gorget was lost by passing natives. There are no traditions of a former mound on the spot, and I know of no direct evidence that a burial ground exists, or formerly existed, here. Possibly excavation would cast further light on this question.

AVONDALE MOUNDS

Four miles east and slightly south of the Renner site, in Clay County, a high ridge runs southward along the right bank of Rock Creek toward its junction with the Missouri. The creek, though short, has a pleasant little valley well able under primitive conditions to provide

shelter and water for a limited number of families dwelling on its banks. Owing to long occupancy by white men, however, traces of earlier settlement are not easily found. The presence of burial mounds on the ridge is evidence of a former community or communities nearby, and since the Missouri bottoms seem not particularly well suited, the habitation sites are probably to be sought on one of the smaller creeks east or west of the ridge. The little town of Avondale, on Rock Creek about half a mile above the mouth of the valley, appears to occupy part of a likely village location.

At the end of the ridge, overlooking a broad expanse of river bottoms, and just south of Avondale are two earth mounds (fig. 1, 8). These I did not examine, but in 1934-35 Shippee dug one and witnessed the partial opening of the other. Descriptions that follow are based on a summary report, which he generously prepared at my request.

The smaller of the two, that on the south opened by Shippee, was about 4 feet high and 30 feet across. Made up of loess from the subsoil of the hill, it had a 6- to 8-inch top layer of humus; no old sod line underlying the mound could be detected. Flint chips, broken artifacts, potsherds, bits of charcoal, and burnt earth were scattered through the fill. It is possible that some of this material represents surface debris gathered up incidentally with the earth used in constructing the mound. No definite soil stratification, if any existed, is mentioned, but there were areas "of an exceedingly hard mixture of earth which contained ashes, charcoal, flint chips and some broken and discarded or lost artifacts."

Within the mound, according to Shippee (letter of March 30, 1940), "about 50 burials were found at depths of 18 to 30 inches, 20 inches being the usual depth. Some of these were without skulls and in others a skull alone was found. At the time of excavation all burials were listed as bundle burials. None were extended, but the possibility of a few being flexed has since been recognized. However, very little skeletal material, other than incomplete skulls and long bones, was found, and these were usually placed in the small grave space in a bundle and with the skull in any position. . . . Some of these bundles were associated in parallel groups, one of which was marked by a stack of four flat stones. Quite often a single stone seemed to mark a burial. Some groups had been placed so haphazardly that they often overlapped. The majority of the burials were in the south half of the mound and near the edge. One was found entirely outside the mound area. Two thick beds of coals containing burned human bones were found. One, 5 feet in diameter, a foot deep, and buried under 20 inches of earth, was near the south edge of the mound; another, 30 inches in diameter and 10 inches deep, was under 18 inches of earth in the western part. A bundle burial covered by a blanketlike layer

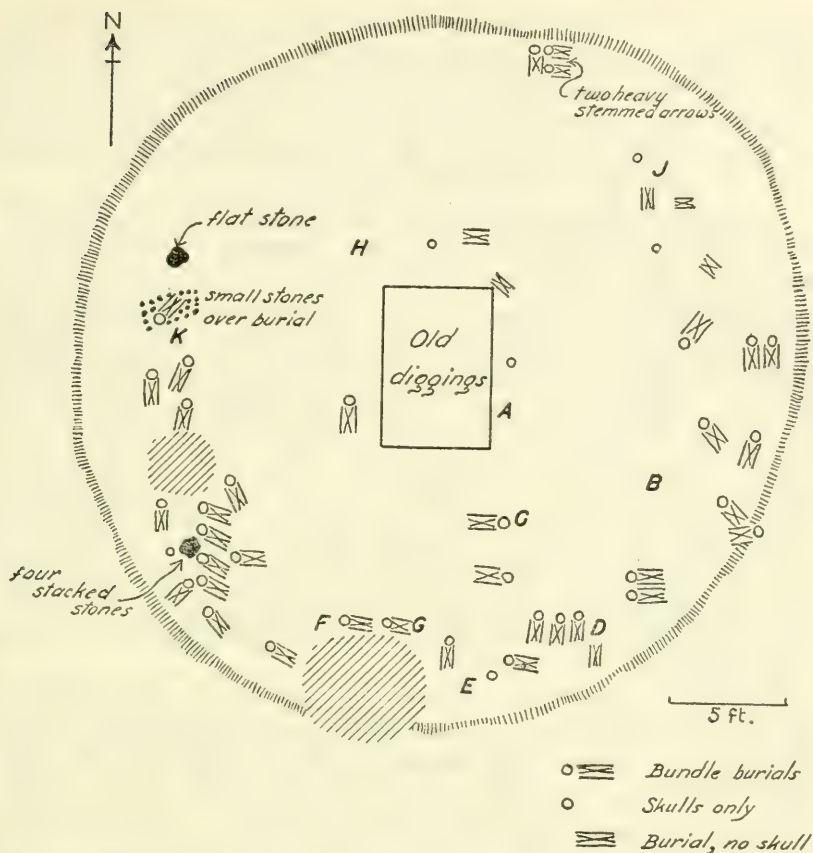


FIGURE 19.—Ground plan sketch of south mound near Avondale, Mo., excavated by J. M. Shippee: A, Waterbottle (J. M. S. No. 1343); B, C, pottery vessels (J. M. S. Nos. 1345 and 1344); D, stone pipe; E, pottery vessel (J. M. S. No. 1347); F, chipped blade (J. M. S. No. 1348); G, lead and pumice; H, pottery vessel (J. M. S. No. 1346); J, pottery vessel; K, chipped drill; cross-hatching indicates charcoal beds with fragmentary bones

of small stones and large pebbles was carefully exposed. This blanket was diagonal to the general orientation of the burial and must have been placed at a time when the exact location of the bones was forgotten. Closely associated was an expanded drill. . . . Of the skeletal material saved, none seem to be rodent gnawed. . . ."

Two whole and three broken but restorable pottery vessels from this mound are in the Shippee collection (see pl. 42). They are described as follows:

"The water bottle, or flask (Catalog No. 1343), has a flattened globelike body 12.2 cm. in diameter [pl. 42, *c*]. The body curves sharply up into a cylindrical neck 9 cm. long and 4.4 cm. in diameter. The total height is 18.7 cm., and the thickness is about 5 mm. A light-buff slip coat burned black in several places is laid over a gray paste. The

surface of this rather crudely shaped and undecorated vessel has numerous pits suggesting leached-out shell. No other tempering material is visible. This bottle was lying near the center of the mound, under 20 inches of earth. Since the neck was lower than the body, the interior was free of earth. No burial was associated with this bottle but a strong triangular knife was near it.

"Pot 1345 is carelessly fashioned [pl. 42, *a*]. It is a shouldered vessel with a hemispherical underbody. Dents and bulges spoil the conformity of the shoulder and flat upper body, which terminates in a slightly flaring irregular rim and two opposing handles or tabs that flare outward from the rim. The pot is 9.5 cm. high. The body diameter is 13.8 cm., neck diameter is 10.7 cm., and thickness of walls is 4 mm. The paste is gray, showing no tempering, but cells and surface pits indicate leached-out shell. The brown and buff slip coat is worn and chipped away on a third of the surface. Part of the interior shows crisscross striations. Incised lines on the upperbody on two sides indicate an attempt to draw pictures. One seems to be a long-tailed quadruped, but the picture is too crude to determine what was represented. This pot was found 8 inches from the surface, inverted and 11 feet from the center in the southeast part of the mound. It was not associated with a burial.

"Pot 1344 is a very symmetrical vessel [pl. 42, *b*]. Inside and out it is smooth except for flat pits evidently caused by leached-out shell. The body is hemispherical beneath a rounded shoulder. A slight neck is made by a very low vertical rim. From the top of opposite sides of this rim, two small well-made handles loop over and join the rounded upperbody. This pot has a fine even gray paste, and the exterior shades from dark brown to gray to light buff. The diameter at the shoulder is 14.5 cm.; at the neck it is 10.5 cm. Height is 10.3 cm.; walls are 4 mm. thick. This pot was sitting upright near a burial, 20 inches from the surface and in a very hard mixture of earth, ashes, and charcoal. The location was 7 feet southeast of the center. A small stemmed point was found in this same hard mixture.

"No. 1347, of about the same size as the preceding pot, is not quite so symmetrical [pl. 42, *d*]. The hemispherical underbody, round shoulder, and upper body terminate in a recurved rim from which two loop handles join the upper body. It is a well-made vessel with walls 6 mm. thick, a shoulder diameter of 13.8 cm., a neck diameter of 10.5 cm., and height of 10 cm. Seven lightly incised figures, shaped like an inverted letter U, decorate the upper body at intervals around the pot. They extend from the neck to 5 or 6 cm. below. . . . Inside are horizontal striations, some of which are deep and broad. The paste is light gray and shows cells. The pitted surface ranges in

color from black fire marks to brown and buff. This pot was sitting almost upright at the southern edge of the mound, close to an infant's skull. The rim had been crushed in and was partly missing. From the weathered appearance of the break, the vessel must have been placed in the mound in a damaged condition. One broken handle was 6 inches above the pot and was caught on a stone that had evidently been placed over the burial.

"No. 1346 is radically different from the other vessels described [pl. 42, *e*]. About the only similarity it holds is a shoulder and a rounded base. The upper body curves in and up to form an almost vertical rim with a rounded lip. Fine grit, with scattered larger grains, coats the outer and inner surfaces, which are reddish brown. The paste seems to be a dark gray with fine grit-tempering material. On the lower body horizontal cord impressions, partly smoothed out, can be seen. This vessel was not broken when found and is still hard, heavy, and strong. In the mound it was 6 feet northwest of the center and was sitting upright 6 inches from the surface. No burial was associated with it. Diameter at the shoulder is 11.5 cm., rim diameter is 10 cm., the height is 7.3 cm., and the walls are 5 mm. thick."

Twenty-eight potsherds included cell- and grit-tempered pieces, some of the latter having cord-roughened exterior surfaces. In the south part of the mound, dissociated from all skeletal remains, was a small bent tubular hematite pipe 33 mm. long. This has a short spur extending out from the bend below the bowl, and is covered with fine closely spaced parallel encircling striations. Two heavy-stemmed points similar to those from the Renner site were taken from a burial at the north edge of the mound, and there is a portion of a third from the southeast edge. Other specimens included a thin leaf-shaped blade 13.2 cm. long by 4.6 cm. wide, six scrapers, three expanding base drills, hematite, and fragments of sandstone, pumice, galena, and polished stone.

The north mound was opened with team and scraper in 1935 by a Kansas City relic collector. Shippee writes that it had been "badly wrecked when I first observed the men at work on it. They had graded away the greater portion of a 5-foot-deep cap of sterile earth and were scraping into several stone-marked burials. . . . From one of these there was dragged a broken pot and a clay elbow pipe, made in the effigy of a bird with folded wings. The head had been broken off by the scraper and was never found. . . . A large celt or ax blank and some chert blades found in the loose earth from this mound are said to have been 'salted' to keep the man paying for the work interested. . . . There were no more than 10 burials found and nothing is known about the manner in which they were placed. In the work carried on by me from the north edge I never encountered a burial. . . .

"One of the men who dug out the burials in the north mound picked out a hard-burned area that he described as resembling a Dutch oven. I found two small fragments about 2 inches thick. . . . They appear to be mostly ashes but mixed with what must have been the top 1 inch is charred vegetation and impressions of either coarse grass heads or small ears of corn. The bottom inch is ash merging with the loess of the mound structure. This upper layer has pitted impressions, slightly channeled (1 inch broad in one and $\frac{3}{4}$ inch in another) which are coated with a paper-thin layer of a gray, buff, and ivory-colored substance. This 'Dutch oven' could have been a cremation basin wherein the fire died out and left a burial and its wrappings partly burned. . . ."

Aside from the specimens mentioned, several grit- and cell-tempered sherds were found in the mound; also broken hammerstones, crude flint knives, hematite, pumice, and sandstone fragments.

The pottery from the south mound (pl. 42) differs in few details from that at the Steed-Kisker site, and in my opinion is more closely related to that than to any other ceramic complex yet reported from this portion of the Missouri Valley. Whether that from the north mound has similar affinities I am not prepared to say. The chipped flint from the south mound, at least so far as large-stemmed arrow-points are concerned, is closer to the Woodland type or to that at Renner's than to any points from known local village complexes characterized by shell-tempered pottery of the type found in the Avondale mounds. Perhaps they represent an earlier period, but their association with burials in at least one instance hardly supports the view that they were accidental inclusions in the mound.

The Problem of the Stone-Chambered Burial Mounds

One of the most interesting and characteristic features of archeology in the Kansas City area is the stone-walled earth-covered burial enclosure. Usage has given a certain fixity to the term "vault," though none of the mounds yet described from the region is, in the true sense, a vault. Their usual nature is pretty well known,¹² but the identity of their builders, the time when they were erected, and their exact position in the local archeological picture are problems that up to the present have baffled all attempts at satisfactory solution. Whether the mystery surrounding them can ever be wholly dispelled is not at all certain, for much of the evidence from the earlier excavations has never been set forth in definite fashion. Moreover, those in Platte and

¹² Shetrone, 1930, p. 351, says that "the Missouri River, traversing the state a little north of center, marks the line of the most interesting and best known culture of the Lower Mississippi area, that of the so-called 'stone-vault' burials." Perhaps "cult" would have been a happier designation; a perusal of the literature will show that these structures, far from comprising a "culture," represent at most but one phase—the mortuary complex—of an archeological manifestation, or manifestations, whose main features otherwise are seen as yet only dimly.

Clay Counties have generally yielded few or no cultural materials sufficiently distinctive to permit correlation with established archeological horizons in neighboring areas. As for the included skeletal remains, these were either ignored, because of their usually fragmentary condition, or else have since been scattered and lost. The few samples still extant too often are unaccompanied by the requisite data as to exact provenience.

In the present section I shall review at some length the evidence accumulated from work to date, insofar as the findings, directly or indirectly, bear upon the particular type of mound in question. Mound construction as well as contents and specimens therefrom are described. This review will take us from Kansas City upriver to northeastern Kansas, then down the Missouri River, and up the Mississippi. That an occasional mound or mound group has been missed is not improbable, though I have sought to include all available published records and descriptions of excavation however brief or incomplete. It is probably also true that certain examples given, particularly some of those on the Mississippi, are not rightly to be classed with the stone vaults of the type found in central Missouri. The type, briefly defined, includes mounds containing a quadrilateral, rectangular, circular, or oblong cell, with vertical walls consisting of coursed horizontally placed stone slabs laid up without mortar. In a few instances mention of a "dry wall" or of a "vault" has been considered sufficient to warrant inclusion of the mound in this discussion.

Earliest description of the chambered mounds of the Missouri Valley appears to be that presented by Judge West to the Kansas City Academy of Science in the spring of 1877. At that time, neither the farmer nor the relic collector had made any marked inroads upon the remains, so that West's observations concerning the external appearance, size, distribution, and internal nature of the mounds are of more than usual interest. In his report (West, 1877b, pp. 15-18) we learn that:

From Mr. Keller's farm, overlooking a branch of Line Creek, in Clay County, to Line Creek in Platte County, a distance of about three-fourths of a mile, I have located as many as twenty-five mounds. I have seen others east of Mr. Keller's, extending as far as Randolph, and I am informed by reliable gentlemen that they are seen west of Line Creek. On the south side of the Missouri River I have located other mounds, in the vicinity of Rock Creek, in Jackson County, but whether erected by the same people remains to be determined upon further investigation.

In shape the mounds examined represent the frustum of a cone, and vary in size from 40 to 80 feet in diameter at the base, and from 18 to 35 feet at the superior plane. They are found situated on the highest points. . . . along the summit of the bluffs overlooking the Missouri River, and with a few exceptions are arranged in groups of from three to five. Those on the left (north)

bank of the river nearly all contain buried chambers or vaults, built of stone, compactly and regularly laid, quadrangular on the inside and circular on the outside. The stones, which are undressed, on the inside are laid horizontally, and apparently have been selected with great care, the walls presenting, when the earth is removed, a smooth inner face.

The chambers, as far as opened, are nearly uniform in size and construction, being $8\frac{1}{2}$ by $8\frac{1}{2}$ feet, with the exception of one, which is $7\frac{1}{2}$ by 8 feet, internal linear surface, and are from $3\frac{1}{2}$ to 4 feet in vertical height. In the center of the south wall of each chamber is an opening, or doorway $2\frac{1}{2}$ feet wide. They are situated due north and south, with one exception, which varies but 10 degrees from a north and south line. The walls are about 18 inches in thickness at the summit, and slope outward and downward to about five feet at the base, at the median line of the square.

Five mounds on the property of Peter Brenner were opened by West. These were in Platte County, beginning about 60 feet west of the Clay County line, and extended for a distance of 200 feet. Three contained rectangular chambers, each with a passage leading out through the south wall. All the vaults contained fragmentary human bones; and in two of the structures burnt human and animal bones were intermingled with baked clay, wood ashes, and charcoal. West was inclined to believe that fire had been used in the third as well. From the first vault opened came several crania; two are described as "of the Dolichocephalus, or long-headed type." Artifacts were absent.

Concerning the remaining two mounds, which were of earth, West stated that one contained only human bones with no evidences of fire. The other "contained burnt human and animal bones, burnt clay, wood ashes, and charcoal, so circumscribed in limit, and intermingled at the plane of the base of the mound, as to render it probable that the deposit accumulated on the floor of a chamber" Since there were no stones he inferred that this chamber may have been "of sun-dried clay, every vestige of the walls of which has been destroyed by the great lapse of time since its erection." One of the earth mounds yielded four flint flakes believed to have been included by chance when the dirt was heaped up.

West argued that the vaults were not covered with stone or wood, since no traces of either occurred within. He therefore suggested a roof of baked clay or of animal skins, and concluded that the chambers represented dwelling places in which the remains of the deceased had been interred even during occupancy by the living.

In nearly all respects, possibly excepting the particular dimensions given, West's description would probably apply to most of the mounds since examined in the immediate vicinity. None of the vault mounds seen by myself, or reported to me, are as much as 80 feet in diameter; few would exceed in their external dimensions the minimal estimates which West gives. His interpretation of mound 3, which contained no stones but might once have enclosed a clay vault, seems labored.

Wholly untenable, of course, are his views as to the domiciliary function of the chambers, and his assignment of an antiquity to be measured in terms of millennia. That he erred in these particulars is not at all surprising if one bears in mind his evident lack of training and experience in the natural sciences as well as the general status of contemporary American archeology.

In the summer of 1878, a year after West's explorations, Prof. Broadhead opened several mounds in the same group east of Line Creek (Broadhead, 1880, pp. 352-354). From his sketch map it appears that this work covered the ridge west of the earlier diggings, directly overlooking the creek valley and the Missouri bottoms. Four of the mounds were found to contain stone chambers 7 feet 9 inches square, all built above ground. Three of these had walled doorways; the direction is given in only one instance, where the passage was "opposite the eastern side." Mound 2, which yielded quantities of charcoal, charred bone fragments, and fire-reddened clay, "was evidently a cremation vault." From mound 3 came several skulls, a skeleton, and miscellaneous pieces of bones, which, except the skeleton, Broadhead thought were from individuals "buried in a sitting posture, or with knees bent, the hands close to or resting on the knees." In mound 6, also chambered but without an entrance, were eight skulls and other fragmentary bones. Flagstones overlay some of the skeletal remains, but since these were not in orderly arrangement or closely set it is not certain that they evidenced a roof. Broadhead notes that "a few of the bones had been gnawed, probably by rodents, and do not furnish as some might say, evidences of cannibalism." The only artifacts mentioned are a black flint spearpoint and a piece of ochre, both from mound 4. This, the largest of the group, was composed wholly of earth; it was 40 feet across by 5 feet high. Broadhead hazarded no guess as to the age of the mounds, but he speaks of a 3-foot oak stump on mound 4, and of another showing 200 growth rings on mound 5.

Whether the allusion to seated burials is to be taken literally is questionable; possibly flexed interments are indicated.

The last recorded investigations of this early period in the mounds opposite Kansas City were those by Curtiss for the Peabody Museum in 1879. In the curator's report for that year (Putnam, 1880, p. 717), we find the following summary account:

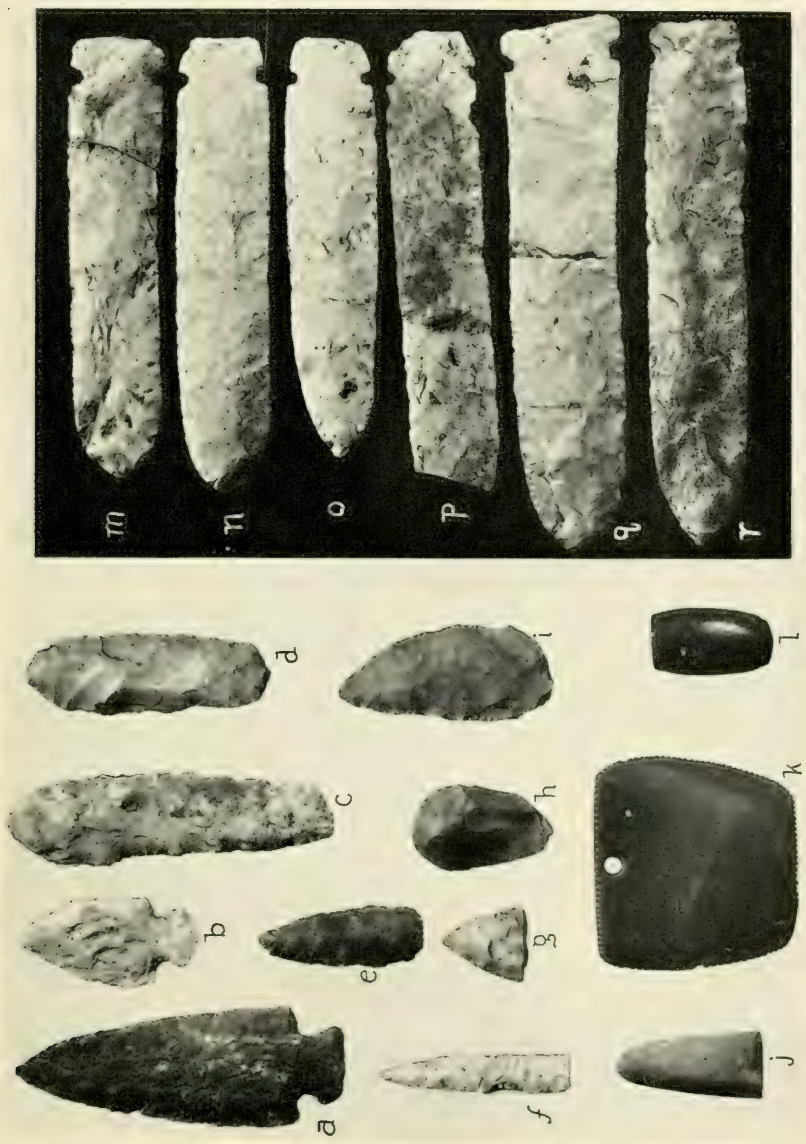
While in Missouri [Mr. Curtiss] opened three mounds which are of the same character as the well-known chambered mounds. These chambered mounds are situated in the eastern part of Clay County, Missouri, and form a large group on both sides of the Missouri River. The chambers are, in the three opened by Mr. Curtiss, about 8 feet square and from $4\frac{1}{2}$ to 5 feet high. Each chamber has a passage-way several feet in length by 2 in width, which leads from the chamber to the opening on the southern edge of the mound. The walls of the chambered passages were about 2 feet thick, vertical, and well made of stones evenly laid without mortar of any kind. The top of one of the chambers had a covering

of large flat rocks, but the others seem to have been closed over with wood. The chambers were filled with clay which had been burnt, and appeared as if it had fallen in from above. The inside walls of the chambers also showed signs of fire. Under the burnt clay, in each chamber, were found the remains of several human skeletons, all of which had been burnt to such an extent as to leave but small fragments of the bones, which were mixed with the ashes and charcoal. Mr. Curtiss thought that in one chamber he found the remains of five skeletons and in another thirteen. With the burnt bones and ashes there were a few flint implements, a shark's tooth, and minute fragments of vessels of clay. A large mound near the chambered barrows was also opened, but in this chambers were not found, and the bodies had been buried in an extended position. This mound proved remarkably rich in large flint implements, and also contained well made pottery and a peculiar gorget of red stone. The connection of the people who placed their dead in the stone chambers, with those who buried their dead in the earth mounds is, of course, yet to be determined.

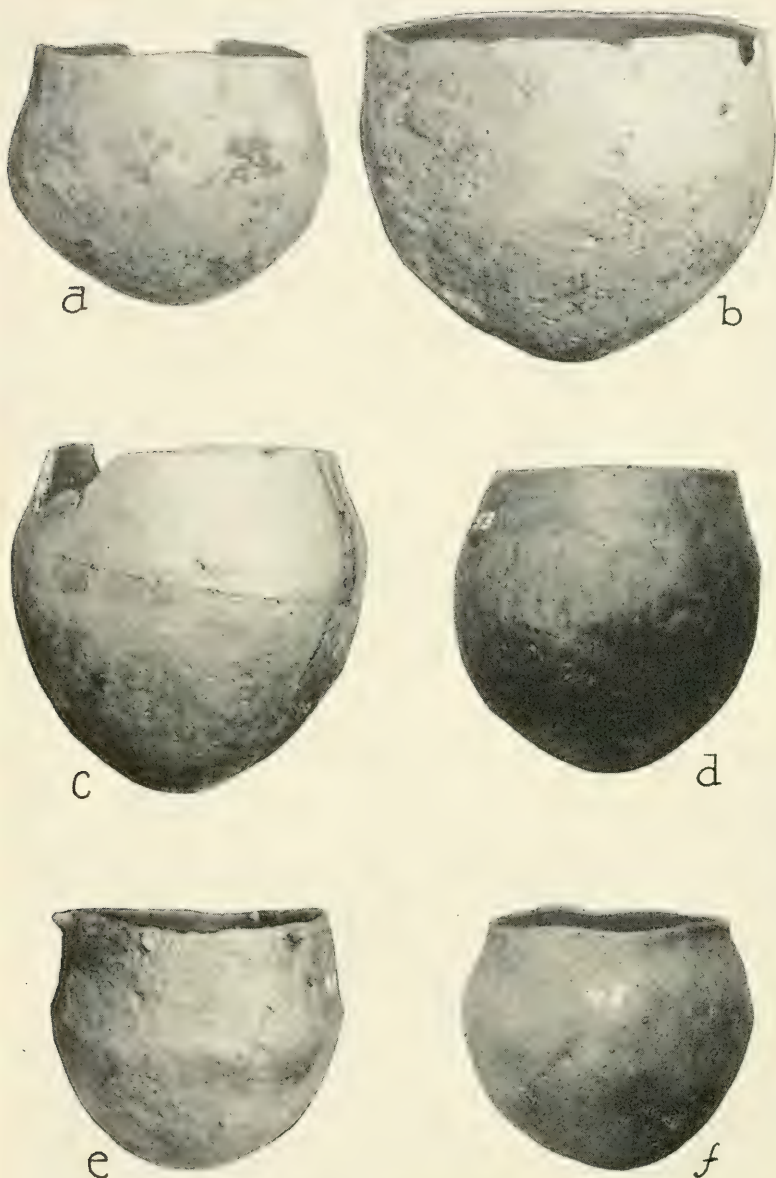
Curtiss's explorations are of particular interest because, unlike his predecessors, he encountered artifacts in the chambered as well as in the earth mounds. It will be noted that Putnam places these mounds in eastern Clay County. I am informed by Mr. Shippee (letter of February 29, 1940) that "Goose Gap in the ridge between Cooley Lake and Fishing River in eastern Clay County is the center of a string of old vaults. . . ." and that at least one old resident of this locality "has a vague remembrance of such a name [i. e., Curtiss] around her old neighborhood." But the list of accessions to Peabody Museum collections for 1879 (Putnam, 1880, p. 738) has these entries: "Fragments of burnt human bones, flint spearpoint, knife, drill, flakes, and broken implements, rubbing stone, red ochre, and a shark's tooth, from chambered mounds on Keller's farm in Clay County, Mo.; . . . fragments of human skull, and five large flint daggers and a hematite bead buried with it, ornament of catlinite, red and yellow ochre, flint knives, drill, scraper, and dagger, from a mound on Wolf Den Ridge in Platte County, Mo. . . ."

Mr. Shippee (letter of February 10, 1940), after diligent inquiry, stated that no one in the Line Creek neighborhood recalls ever having heard of Mr. Curtiss or of Wolf Den Ridge. However, if the earth mound is correctly located in Platte County, as Putnam states in his list of accessions, I doubt that the chambers were as far east as Goose Gap, which is more than 20 miles distant as the crow flies. In this event, Putnam would not be likely to speak of the former as "near the chambered mounds." Also, the statement that the chambered mounds were "on Keller's farm" recalls Judge West's previous allusion (West, 1877b, p. 15) to barrows on "Mr. Keller's farm, overlooking a branch of Line Creek, in Clay County. . . ." All this leads me to suspect that Curtiss worked in western rather than in eastern Clay County, and very probably on the ridges east of Line Creek.

Through the courtesy of Philip Phillips and the Peabody Museum of Harvard University I am able to reproduce here (pl. 43) some



ARTIFACTS FROM BURIAL MOUNDS NEAR KANSAS CITY.
Excavated by Edwin Curtiss. Courtesy of Peabody Museum, Cambridge.



POTTERY VESSELS FROM DAWSON STONE-CHAMBERED MOUNDS,
BOONE COUNTY, MO.

Courtesy of Missouri Historical Society.

of the artifacts recovered by Curtiss. Only one of those illustrated (pl. 43, *a*) appears to be from the chambered mounds. Catalogued as a "notched point from the eastern part of Keller's farm . . ." it may be the "flint spearpoint" referred to in the list of accessions. The mound is described as a "Dolmen mound, stone chamber 8' down (?), 4½'-5' high, walls 2' thick, walled entrance 2½' wide." The other specimens are from Wolfden (or Wolf Den?) Ridge, Platte County, and must be from the large mound containing the extended burials. This is further described as an "earth mound 75' East and West by 20' wide, 5'-6' high; human bones 10' from east end." The daggers, of which the largest shown (pl. 43, *q*) measures 26 by 5.8 cm., are of rosy white chert. They are unlike any of the large blades of local provenience which have yet come to my notice, but Shippee reports (letter of February 10, 1940) seeing similar specimens in collections from Jackson County. The pierced pendant with nicked edges is presumably the "ornament of catlinite" in the accessions list, though the catalog data identify it as red slate. In the treatment of the edges it recalls the sagittate object of fine-grained red sandstone found by Shippee on the bluffs just north of North Kansas City (pl. 20, *c*). The hematite bead is shown as *l*. Of the remaining specimens none appears particularly diagnostic so far as the cultural manifestations revealed by our own excavated materials are concerned, although the flake knives (*c* and *d*) bear a slight resemblance to objects from the Steed-Kisker site. It has been impossible up to the present time to learn the fate of the "minute fragments of vessels of clay" found by Curtiss in one of the vaults or of the "well made pottery" from the earth mound, and I am unable to state their nature.

In 1907, while engaged in mound investigations in central Missouri, Fowke undertook a reexamination of five of the Line Creek vaults. All had been opened before, and his efforts accordingly were directed mainly toward a determination of their purpose and manner of construction. In this he was successful; he surpassed all his predecessors in the matter of accurate description and in addition left a series of excellent photographs (Fowke, 1910, pp. 65-72).

Three mounds were excavated on the Eugene Keller farm, in Clay County (Fowke, 1910, pp. 67-69). In mound 1 "only 7 feet of the wall was intact along the north side; this was about 3½ feet high" and nearly vertical. On the south side were the remains of an entrance passage flanked by wing walls. In mound 2, a pear-shaped slab area covered a vault 7½ feet square by 2½ feet high. Disturbed wing walls marked the location of the doorway to the south. The vault walls bore evidence of great heat, and throughout the chamber were scattered masses of burnt earth most or all of which had evi-

dently been carried in. Bits of burnt bone and siliceous iron ore were also present. Mound 3 contained a rectangular chamber 8 feet long, with walls up to 26 inches high. The doorway, walled as usual, opened to the south. On the vault floor lay the burnt bones of an adult and a child; underneath, but presumably still a part of the same tomb, was an excavated slab-floored grave, which held a few scattered bits of calcined bone.

Two other mounds, on the farm of J. P. Brenner in Platte County, were also examined (Fowke, 1910, pp. 69-72). The first, identified by Fowke as Broadhead's No. 3, had a nearly square chamber 8 feet 4 inches long, with walls up to 3 feet high, and a passage opening to the east. The second, corresponding to either No. 6 or No. 7 of Broadhead, disclosed a rectangular vault about 8 feet long, with sloping walls 3 feet 8 inches high. The doorway on the south side was walled. On the vault floor, where they seemed to have been dug out and replaced by earlier excavators, were four flat stones covering the femora and skull fragments of two adults and an immature individual. All these bones "were much gnawed by mice."

Fowke also (pp. 72-73) commented briefly on the Klammm mound, a short distance north of Brenner's, which had been completely torn out in 1906. There is nothing in his remarks to indicate the presence of a chamber, although stones had been thrown out. Potsherds scattered about indicated "by varying decoration that not fewer than four vessels" had been destroyed, and the last excavator claimed to have found "nine whole pots, but broke seven of them in getting them out. One of the pots was much larger than the others and had angels stuck on all around . . ." These "angels", we may suppose, were probably effigies attached to the rim or upper part of the pot. Shells and shell beads, yellow paint, flints, hoes, arrows, etc., as well as three whole skulls were likewise said to have been found. The relative abundance of pottery and other artifacts in this mound contrasts strikingly with the extreme rarity of specimens in the chambered barrows of the district. It will be recalled that the earth mounds opened by Curtiss and, more recently, by Shippee, have also yielded cultural remains in some quantity. I am tempted to believe that the Klammm mound did not include a vault, but hasten to point out that this view is only an opinion and cannot be proved, or for that matter disproved, by any reliable evidence now at hand.

The Brenner-Keller-Klammm mound group, comprising all the excavations along Line Creek just considered (fig. 20, 5), includes the largest aggregation of chambered mounds recorded on this portion of the Missouri. Fowke says there were 18 in 1907; West, in 1877, counted 25. Smaller clusters are known to exist within a few miles, all on the north side of the river. Shippee writes (letter of February

19, 1940) that "In Platte County last week I found the remains of three stone vaults on a secondary ridge 200 yards northwest and across the creek from the Deister Site (Hopewellian), which is $1\frac{1}{2}$ or 2 miles north of Renner's on Line Creek." Local tradition has it that "the Smithsonian dug out two of the vaults," but I am unable to confirm this. Near Birmingham, in Clay County about 9 miles east of Line Creek (fig. 20, 6), the remains of a recently dug vault were visible in 1938. The form and size are uncertain, but one corner and portions of two adjoining straight walls 26 inches high, suggested a rectangular outline. The stones in the corner were fire-reddened, and Shippee says that at the time of his first visit charred human bones lay at the base of the wall. Passing reference has already been made to mounds in the vicinity of Goose Gap, north and northeast of Cooley Lake in eastern Clay County. I saw some of these in 1937, at which time they appeared to have suffered extensively from cultivation and the activities of relic hunters. Comparatively small in size, their superficial appearance was reminiscent of those along Pearl Branch, but I could find no one capable of furnishing a complete and trustworthy account of their internal structure and contents.

Judge West's suggestion that chambered mounds also occur west and northward of Line Creek has long since been verified. Elsewhere in this report have been detailed the results of our excavations at the Young site on Brush Creek, and along Pearl Branch (fig. 20, 4). At the Young site, one vault was opened, disclosing a quadrilateral chamber with a walled passage to the south. Several broken skulls and a number of long bones, including burnt and unburnt specimens, were recovered, but no artifacts other than two small potsherds. At Pearl Branch, eight vaults were examined. Six (Pearl C and D; Nolan A, B, C, D) were rectangular with walled entrances opening toward the south, southeast, or southwest. A seventh (Babcock B) was elliptical, with an opening at the south end. The eighth (Pearl E), not certainly identified as a vault, had been so thoroughly plundered by relic hunters that no structural details could be gotten. Skeletal remains included one extended burial in Nolan A, and incomplete traces of one each in Pearl C and Nolan B; disarticulated skulls and bones from Pearl C, some of them fire-marked; and fragmentary cremated bones from Nolan B and C. Bones in Babcock B, collected by previous excavators, included disarticulated crania, long bones, and fragments, none of which were burnt. Artifacts were few in number. Pearl C yielded a scorched antler rubbing tool, an unworked animal tooth, and three round pebbles. From Nolan C, near the floor at the north side, came one small jar; elsewhere in the mound, under circumstances strongly indicative of a later intrusive origin, were five shell-tempered vessels. In Babcock B, two grit-tempered vessels of Hopewellian type, an arrowpoint, and some shells are said to have been found.

A brief digression is in order here to consider the rather unusual features associated with Pearl mound A. This, it will be recalled, contained no evidence of a vault, but beneath a disturbed layer of slabs was found a rectangular pit filled with rocks, charcoal, and masses of baked red brick-like clay. On some of the larger clay lumps were flattened areas impressed with closely laid reeds or slender rods. The north, west, and south walls of the pit, where not broken down by previous excavators, showed shallow vertical flutings and to the east there was a sort of chutelike opening. The latter feature may have been due to the activities of relic collectors. Surrounding the pit, but underlying the slab area, was a shallow basin. Unfortunately, the mound had suffered such extensive damage in the spring preceding our work that accurate reconstruction is not possible. It may be observed, however, that the published data on mounds in the great bend and on the lower Missouri offer nothing comparable to the mound just described. There appear to be certain similarities to a "prehistoric cremation furnace" described by Tiffany (1876, p. 64) a few miles below Davenport, Iowa. His observations in full are as follows:

Situated on the farm of Mr. J. Staffelbach, 7 miles below the city, and $\frac{3}{4}$ mile from the [Mississippi] river. . . .

The mound explored was upon the crest of a spur bearing a little south of west from the main bluff, which here forms a prominent projecting point, known to river pilots as Eagle Point. The mound was about 25 feet in length, and 2 feet high, although from its peculiar position upon the very narrow and sloping ridge, its dimensions were difficult to determine.

The surface was of the usual black soil to the depth of from 6 to 12 inches. Next was found a burned indurated clay, resembling in color and texture a medium burned brick, and about 30 inches in depth. Immediately beneath this clay was a bed of charred human remains 6-18 inches thick. This rested upon the unchanged and undisturbed loess of the bluffs which formed the floor of the pit. Imbedded in this floor of unburned clay were a few very much decomposed but unburned human bones. No implements of any kind were discovered.

The furnace appears to have been constructed by excavating the pit and placing at the bottom of it the bodies or skeletons, which had possibly been collected from scaffolds, and placing the fuel among and above the bodies, with a covering of poles or split timbers extending over and resting upon the earth, with the clay covering above, which latter we now find resting upon the charred remains. The ends of the timber covering, where they were protected by the earth above and below, were reduced to charcoal, parallel pieces of which were found at right angles to the length of the mound. No charcoal was found among or near the remains—the combustion there having been complete. The porous and softer portions of the bones were reduced to pulverized bone black.

Whether Tiffany was correct in his interpretation, I think it is quite possible that a furnacelike structure more or less like the one he describes occupied the central pit at Pearl A, and that the baked clay represents its erstwhile roof. One can only regret the zealous effacement there of the evidence, which properly excavated and pieced

together might have permitted a closer and more fruitful comparison with remains elsewhere.

Little information is available regarding chambered mounds north of the Pearl Branch group. At least one small cluster has been reported from the northwest corner of the county near Iatan (fig. 20, 3), and it is quite likely that others are present, or formerly were, along the intervening bluffs. Whether they occur in Missouri beyond the northern limit of Platte County I am unable to say. Across the river, however, in Doniphan County, Kans., similar structures have been found. One of these, on a ridge overlooking Brush Creek about a mile northwest of Geary City (fig. 20, 2), was opened several years ago. When we visited it in 1937 there remained only one or two courses of stone on the east, north, and west sides; the south wall had been completely demolished. The area inclosed measured a little over 6 feet east and west and must have been approximately square. The walls seemed to have been built with less skill than those in the chambers near Kansas City. I was unable to learn whether a passage had existed but was informed that no bones or artifacts had been found.

A close-to-type variant of the chambered mounds is represented by stone graves in northern Doniphan County, a few miles south of the Nebraska line (fig. 20, 1). One of these, opened by Ed Park, is situated on a hill northwest of Cedar Creek and about $2\frac{1}{2}$ miles south of White Cloud. The walls had been carefully laid up so as to form a rectangular box measuring about 8 by 4 feet, with a depth of $2\frac{1}{2}$ feet; there was no entrance. The contents, so far as I could learn, included nothing except a few badly decayed bones. Fowke (1922, p. 152) reports an apparently similar "box grave" at Iowa Point in the same county. More recently one of this type on a hill overlooking Mill Creek, about 2 miles southwest of Iowa Point, was systematically opened by Stanley Bartos for the University of Nebraska. From the information he has generously supplied (letter of December 5, 1939), it appears that this was also a rectangular affair, measuring 7 by 4 feet and from $1\frac{1}{2}$ to 2 feet in height. The long axis lay east and west, and at the east end was a walled entrance $3\frac{1}{2}$ feet long by 12 to 14 inches wide. Bartos states that the upper 15 to 18 inches of soil in the chamber was dark, mixed, and soft. Below this was a 5 to 8 inch layer of hard earth "which appeared to have been mixed, wetted, and then tamped into place." This stratum, which did not extend into the passage, contained the fragmentary remains of "at least four individuals, all extended and with their heads to the west." No pottery or other artifacts were encountered. In the vicinity of the site, along Mill Creek, Bartos says that sherds have been found "of a Woodland type, thick, grit-tempered, and with heavy

cord-impressions. The arrowpoints from this locality are stemmed and thick in cross section, resembling the points which we find associated with Woodland materials." He points out, however, that there is no proof of direct relationship between these specimens and the vault grave.

About a mile south of Iowa Point, on a promontory overlooking the Missouri River bottoms, are the vestiges of a stone burial mound that, from all accounts, seems to have resembled certain chambers reported by Fowke in central Missouri. This, I was told in 1937, had been dug out about 25 years previously by Mark Zimmerman "and someone from the Smithsonian Institution or Peabody Museum." Details are lacking, but the mound is supposed to have contained a doubledeck or 2-story walled structure, or perhaps one vault set atop a lower one that had been roofed with stones. We attempted no excavation and were unable to learn the shape and size of either chamber, the nature of their contents, or whether entrances were found. On the slopes to the south have been collected grooved axes, stemmed snubnose scrapers, celts, and potsherds. The latter include one large grit-tempered mica-flecked piece bearing rocker impressions, several others which are cord-roughened, and rims with small nodes along the lower edge of a modified collar. These last are reminiscent of some Nebraska Culture materials (Strong, 1935, pl. 14g, 15); the axes, celts, scraper, and rocker-roughened sherd would fit into the trait complex at the Renner site. Which, if either, of the two manifestations hinted at by these specimens was responsible for the nearby vault mound is wholly conjectural.

So far as my information goes, there are no known instances of walled tombs along the Missouri in Nebraska, Iowa, or extreme northwestern Missouri. It would appear that their northern limit of occurrence here is at or very near the latitude of the Kansas-Nebraska State line. It is true, of course, that mounds and burial pits in which stones were used are found far beyond, but in these the slabs were not laid in horizontal courses to form a definite wall.

Below Kansas City the work of Fowke and others has revealed the presence of chambered mounds at a number of localities in central and eastern Missouri. Characteristically, these are along or near the valley of the Missouri River. An exception of considerable interest is a group about 50 miles southeast of Kansas City in Johnson County near Warrensburg (fig. 20, 7). Situated on a lofty spot along the Blackwater River, this group was explored about 1878 by students of the local normal school (Anon., 1878; Stevenson, 1878). There are some discrepancies between the two accounts. According to Stevenson (1878, p. 107)—

Every mound excavated so far discloses the stone box within, forming the true cist. The walls of this box are made of flat stones, with no cement between.

presenting an appearance very like the oldest form of cyclopean masonry in Greece. They are all essentially the same, their dimensions being nine feet in width, eleven in length, and six in depth.

We should state that these are the measurements of the box, the mound itself being about fifty feet in circumference at the base and ten in height.

The other report (Anon., 1878) says that the largest mound—

is about 35 feet in diameter at the base and about 5 feet high in the center. The vault is 7 by 13 feet, surrounded by a rude wall of thin limestone slabs and covered by the same. In the vault were found the remains of 17 human beings, arranged in two rows of eight each and the odd one in the middle—the skulls being about one foot apart. The earth was so packed about them that it was difficult to secure bones in perfection, yet a number of jaws, thigh bones, etc. were saved.

About midway of the vault on the south side a pottery jar was found of a capacity of three quarts. The rim has an attempt at ornamentation. Around the neck is the remains of what was a copper band about an inch in width, while around the widest part, at the middle of the jar, is a two-inch band of thin silver. In the northwest corner a similar jar was found, but without the bands. There were also arrowheads, pieces of lead ore, paints, etc., found mixed with the bones, and at the west end were found several stone pipes, some of soapstone, others of bluish sandstone. One was about six inches in length, with the bowl, stem, and holder all cut from one piece of stone. Some of the red paint is very soft, and when rubbed on the hand has a peculiar lustrous metallic appearance.

In the other mounds were found flint arrowheads, red ochre and other paints, and round pieces of flint, supposed to be for grinding purposes, and also good sized lumps of lead ore. . . . Several deer horns were also found, and had the appearance of having been used as implements, as daggers, or something of that nature.

Stevenson (1878, pp. 108–109) also mentions the pot with the metal bands, the hematite, and worked bone and flint. He observes further that—

Plates of mica have been unearthed, discolored with clay and so disconnected from all else as to leave their use only a matter of conjecture.

A very interesting specimen and one which bears largely upon the history of this people, is a large conch shell, nine inches in diameter, and eleven inches long.

One of the important relics is made of greenish-blue slate and is what is known as a "skinning knife" or "scraper," the grooves running across it in various directions showing a rude attempt at ornamentation, while the hole drilled through it shows its means of attachment to the person. . . .

Another remarkable instrument found is a circular disk of a peculiarly fine grained stone with a groove around the edge, and a partial perforation at the center. It is $2\frac{3}{4}$ inches in diameter and one inch thick. The stone of which this implement is made is rather soft and contains much lime . . . The fine polish given to the disk indicates the laborious use of sand and water.

It is extremely difficult to judge in how far the descriptions partially quoted above derive from really adequate observations. The disparity in mound dimensions may reflect simply the fact that both observers were speaking in general rather than specific terms; or perhaps one or the other, or even both, parties was using hearsay state-

ments. Some of Stevenson's inferences and general deductions, not quoted here, establish him as an out-and-out amateur or a dilettante who gave free rein to his imagination. But it may be questioned whether his remarks are any more open to suspicion than the newspaper story preceding them. There is nothing inherently improbable in the discovery of pipes, worked flints, paint, and galena, for most or all of these items have also been reported from mounds in central Missouri below the mouth of Blackwater River. As to the stone disk with grooved edge and the pierced slate "skinning knife" no valid identifications are possible from the available evidence; the former suggests an ear plug, the latter possibly a gorget or pendant. Conch shells have been found at other Missouri sites. Mica is rather more unusual. But most extraordinary of all is the clay vessel said to have been inlaid with copper and silver bands. For Missouri, at least, this would appear to be a unique specimen, at any rate if of aboriginal manufacture. Unfortunately, my attempts to trace the subsequent history of these specimens have not been very productive, and their present whereabouts, if indeed they still exist, are unknown.¹³

The Blackwater River, flowing east by north from Warrensburg, unites with the Lamine to empty into the Missouri in northern Cooper County, 5 or 6 miles above Boonville. By water, this is about 140 miles below Fishing River and 180 miles below Kansas City; approximate airline distances are 75 and 100 miles, respectively. The archeology of the intervening region is not well known; I have been unable to find any record of vault mounds but have no doubt that examples of the type will yet come to light here. At any rate, below the Blackwater they occur again in some numbers along the Missouri, and particularly, it would seem, on its left bank.

In southeastern Howard County, which lies directly across the river from Cooper County, is the Kurtz mound (fig. 20, 8) opened by Fowke in 1907 (Fowke, 1910, pp. 63-65). This was 11 feet high by 60 feet in diameter. At the center a slab area measuring 13 feet by 11 feet 9 inches covered a rectangular vault, 7 feet 9 inches long by about 3 feet wide, with rounded ends. There was no doorway. Twenty-one inches below the top of the wall was a rock pavement on which lay traces of a skeleton. Beneath one of the slabs were three tubular shell beads an inch long. Removal of the pavement and enclosing wall disclosed the fact that the structure had been built over an earlier burial chamber "whose exact inner dimensions could not then be ascertained; but it was considerably larger than the upper vault. It contained the remains of at least 25 individuals, ranging in years from

¹³ In reply to my letter of inquiry (March 16, 1940), A. A. Lind, supervisor of the Museum at the Central Missouri State Teachers College, Warrensburg, states: "I fear the interesting artifacts you mention were all lost in the fire that destroyed the buildings of the Normal School in 1915 . . ." (letter of March 20, 1940).

infancy to old age. Nearly all were laid north and south; they were found at all levels from the original surface to the pavement of the upper vault. . . . Scattered among them were fragments of partially cremated bone. The bodies seem to have been interred at various times after death; in some cases bones were in their proper order; in others, bundled, bunched, or scattered . . . Two skulls, a jaw, and one pot were secured in fairly good condition" (Fowke, 1910, p. 64).

Adjoining Howard County on the east is Boone County, in the central and southern portions of which a number of chambered mounds have been investigated. The earliest work here of which records are available appears to have been by Broadhead, who, in 1893, opened a solitary mound overlooking Hinkson Creek 2 miles southwest of Columbia (fig. 20, 9). Of this mound it is reported (Ficklin, 1894, p. 145) that—

Bones were uncovered at the first shovelful, and from the top of the mound to the original surface of the ground there was a mass of bones, etc., in the utmost confusion. Some of the bones had been very badly gnawed. Near the north side of the wall was found a greenstone celt, finely polished, and bearing evidence of much usage. Near the east side occurred the remains of three earthenware vessels. The fragments of one of these vessels were so intermixed with the skull bones of a child as to make one believe that the pot was placed over the child's head at the time of burial. Near the west wall were found three pipes, both valves of a large mussel shell, and fragments of an ornamented earthenware vessel. Two of these pipes are in my possession; the other, together with the above-mentioned celt, belongs to Professor Broadhead.

Throughout the mound occurred little pockets of burned clay containing fragments of bone.

The wall in this mound was compactly built of flat stones; was 3 feet high; and the enclosed space was an irregular quadrangle in shape; three of the sides being 8 feet in length, the other 9 feet. No regard was paid to the points of the compass.

Additional work in the district has since been conducted by the University of Missouri. In 1935 Harrington (1938) opened a mound 5 miles south of Columbia on Little Bonne Femme Creek. Though this had been partly demolished by earlier excavators, it was found to contain the remains of a vertical-walled rectangular vault about 7 or 8 feet long, with an estimated width of 5 feet or slightly more. The total area covered with stones was about 18 feet in diameter. The walls were only about 20 inches high but may have been higher originally. The chamber floor consisted of three layers of thin carefully fitted slabs, and it is suggested that the structure was covered with another layer over which earth was piled. No mention is made of a doorway. Within the chamber were two infant skeletons and the scattered bones of an adult male whose skull, on one side, showed evidences of burning. Otherwise, burnt bone fragments were found only outside the vault. No artifacts were found in the vault

proper, but from the surrounding fill and the plowed topsoil above the chamber were taken five grit-tempered sherds possibly representing two wares, drill fragments, thin stemmed and corner notched arrowpoints, crudely chipped blades, a broken sandstone abrader, end scrapers, hematite, and fragments of polished igneous stone. Harrington concluded that "the method of laying up the stone vault resembles so closely the many mounds of this type excavated by Fowke along the Missouri River in central Missouri that the component represented at Bo 1, in all likelihood, belongs to the same cultural manifestation."

During the following summer two other mounds were investigated, both on the bluffs of Perche Creek overlooking the Missouri about 7 miles southwest of Columbia (Berry et al., 1938). The first, Bo 4:2, about 30 feet in diameter by 3 feet high, had a roughly circular chamber about 2 feet high and 8 feet across, with walls 2 feet thick. No doorway is mentioned. Human bones, mostly disarticulated and ill preserved, were found in the enclosure, while the mound fill outside yielded some fragments and a few whole skulls. Within the vault were the incomplete remains of about 12 extended supine burials with heads toward the northeast. Bundle burials were about equally numerous. Among both extended and bundle burials were some that had been burned, and evidences of fire occurred on a few of the isolated fragments as well. It is estimated that about 30 individuals were represented. Cultural material was found in as well as outside the vault. This included about 100 soft grit-tempered sherds, 6 of which were vertical rims from small pots; partly smoothed over incising was present on 3 or 4 fragments. Two clay pipes, 1 of elbow type with conical bowl, and a fragment of a third with incised lines encircling the top of the bowl, came from the mound, but whether out of the vault or from the surrounding fill is not clear. Otherwise, there were stemmed and notched arrowpoints, a crude scraper, the basal portion of a drill, parts of 2 bone awls, and 2 bits of hematite.

The second mound, Bo 5, measured 60 by 45 by 10 feet. Its central feature (Berry et al., 1938, pp. 27-33) was a roughly square stone enclosure 10 by 8 feet across, with walls about 2 feet high and 3 to 3½ feet thick. At the level of the base of the wall inside the vault, was a flagstone floor; another layer of rock comprised a roof. The remains of at least 10 or 12 individuals were in the vault. These included 5 articulated extended primary burials, 2 bundles, cremations, possibly a semiflexed interment, and fragmentary remains. Artifacts found among the bones included 2 cylindrical antler objects, each with 1 socketed end, and a third without the socket; the pierced leg bone of a deer; a rough split-bone awl; a tubular bone bead; a shell spoon

(?); a few small seashell beads; a broken granite celt; hematite; a pink chert knife; broken projectile points, including one of "Maples Mills" type; and a few grit-tempered potsherds.

Of especial interest in Bo 5 was the presence of several graves that evidently antedated construction of the main vault. One of these, feature 4, was a semiflexed burial lying about 2½ feet below the vault floor in the southeast corner. Feature 5, extending diagonally under the east vault wall, consisted of two extended supine skeletons in a pit lined with thin slabs set on edge and covered over with several layers of rock. Feature 6, a disarticulated burial covered with rocks "set at angles to each other so that they would not slip in on the skeleton," lay partly under the southeast wall. Feature 7, running just under the southwest corner, was an incomplete skeleton, supine, on a rock pavement. Features 2 and 3, whose stratigraphic relation to the vault are not so clear, may also have preceded it. In each interment had been on a slab floor about 7 or 8 by 2½ feet, around which slabs were set on edge. From feature 3, an infant burial, came several seashell beads, the only artifacts found in any of the prevault structures.

Below Bonne Femme Creek, in the narrowing south end of Boone County (fig. 20, 10), Fowke reported several vault mounds. One of two mounds on the Baumhoefer farm, 2 miles south of Easley (Fowke, 1910, pp. 54-56), had as its central feature a reniform chamber about 2 feet 8 inches high, with outside measurements of 14 by 10 feet. Inside was an excavation that held the skeletons of four extended adults and an infant, all lying a foot below the top of subsoil. Beneath these burials, which Fowke thought pertained to the main vault, and under a layer of flat stones was an older extended burial. This was surrounded by slabs set on edge, recalling thus some of the cist graves noted by Berry and associates at Bo 5. Two other cist graves lay just north of the main vault; their temporal relationship is not clear, but they had been included within a supplementary wall of single stones that began and ended at the vault. There was no doorway; cremation is not mentioned; and the only cultural objects were two bits of conch or other seashell out of the vault.

A mile west of Hartsburg, and only 3 or 4 miles below the Baumhoefer site, is the Dawson group of 15 mounds. In 3 of these, out of 13 opened, Fowke discovered chambers. In mound 9 (Fowke, 1910, pp. 33-35), the rocks formed a rough wall about 2 feet 9 inches high, which enclosed a rectangular floor area 8 feet 7 inches by 3 feet 11 inches. In the southwest wall a passage 2 feet wide, filled with earth, was flanked with regularly laid-up walls. Fragments of human bones, including parts of 12 skulls, were scattered through the vault fill, and there were fragments of 5 pots besides numerous potsherds.

One pot of globular wide-mouthed type is figured (Fowke, 1910, fig. 6), but descriptive details are lacking. The vault had been built partly over a grave containing 2 extended burials.

Mound 11, 50 feet in diameter by 6 to 9 feet high, presented a rather more complicated situation (Fowke, 1910, pp. 36-39). The vault walls, 3 feet 2 inches high and leaning outward at the top, formed a rectangle whose floor was 9 by 7 feet. The entire southwest end had been left unwallled, being closed only with dirt and an outer shell of stones. On the floor lay the remains of six bodies, which had been cremated elsewhere and carried in. Three other extended skeletons had been burned in situ; one was accompanied by three bone beads, another by an undescribed pot. In the corners were burnt bones intermingled with unburnt, among them a whole vessel and parts of several others. Above the bones and artifacts the vault had been filled with earth to the top.

Above and outside the vault walls, and in Fowke's opinion bearing "no relation to the original character of the structure," were a number of other burials. One, extended and supine, lay on a slab pavement surrounded by stones set on edge and covered with other slabs originally supported by cross timbers. Other bones, representing the remains of several cremated bodies, were in and below a bricklike mixture of clay, charcoal, and ashes, all of which had been burned elsewhere and later interred in the mound. Two bodies lying side by side slightly below the level of the topmost stones in the vault had been burned on the spot. Three whole pots were associated with these last skeletons, and the fragments of at least four were found among the other cremated remains. There were also two elbow-shaped pipes (Fowke, 1910, figs. 7 and 8). One was of clay; the other, of soft white chalklike material, had a bulbous bowl and "somewhat resembles the 'monitor' type."

Mound 13, largest of the Dawson group (Fowke, 1910, pp. 39-42), was 50 feet across by 10 feet high. It yielded evidences of a disturbed upper vault 5 feet 3 inches long inside, which contained fragmentary deer and human bones, some marine-shell beads, and pieces of a pot. Below this was a larger chamber, quadrilateral with rounded corners, and having a floor area 11 feet 2 inches by 7 feet. Height of the walls approximated 3 feet 6 inches, their thickness about the same. The doorway, filled with earth and rocks, was to the southwest. The north half of the vault was filled with burnt and unburnt earth, some of bricklike hardness, which is supposed to have been carried in. No skeletal remains occurred in this material, but on and just above the floor were numerous burnt bones and fragments. Parts of an extended skeleton, not charred, were noted, and here and there were a few other unburnt bones. Scattered among these remains were two bone beads

an inch long, a few shell beads, a pot "holding a pint, with small projecting points at intervals around the outer edge of the rim" (Fowke, 1910, p. 41), two more entire vessels, and parts of at least two others which had been broken.

The other mounds of this group, covering an area about 400 yards long, were of earth or of earth and rock. No. 7 contained a sort of vault or large cist about 6 feet square, walled with slabs set on edge. Below this was a grave with turtle shell and fragments of a pot. Other pottery remains included "a broken pot with a square top, resembling that shown in figure 1, except that the bottom is somewhat pointed" (Fowke, 1910, p. 29) from mound 5; a bowl of soft red pottery and a "coconut pot" of $1\frac{1}{2}$ pints capacity from mound 6; and three pots from mound 8. From mound 6, also, came "many shell beads having the border of the opening ground off" (Fowke, 1910, p. 30) and others made of small seashells. Two chipped flints were found in mound 10. Since none of the objects are figured or fully described, it is impossible to compare directly the vault finds with those from the other mounds.

At the Ewing site in Cole County, on the south side of the Missouri just above the mouth of Osage River, 2 of 7 mounds examined were found to have stone vaults. In mound 6 (Fowke, 1910, p. 14) the vault was rectangular, with interior dimensions of $7\frac{1}{2}$ by $4\frac{1}{2}$ feet; the walls varied in height from 1 to 3 feet, and there was no doorway. Within, burnt earth carried in from the outside overlay a tightly flexed skeleton. On the original surface were remains of 3 or more extended burials; these had been covered with a foot of earth on which 2 other bodies had been placed. Single bones and fragments were scattered through the fill. There were no artifacts. Mound 7 contained a central chamber $8\frac{1}{2}$ by 7 feet; the walls, $1\frac{1}{2}$ to 4 feet high, were pierced with a doorway at the south side. In the vault were 2 extended skeletons, heads to the east, 10 or more skulls, and many other bones. There was evidence of cremation. With one child's skeleton were 11 tubular beads from 1 to $1\frac{1}{2}$ inches long, fashioned from the columella of a large marine shell. The remaining mounds of the group all contained slab areas of varying proportions, and mound 1 yielded a few nondiagnostic stone and bone objects.

Chambered mounds have also been reported in Gasconade County, south of the Missouri about the mouth of Gasconade River (fig. 20, 12). The Uffman mound (Fowke, 1910, p. 9) had a rectangular enclosure 8 feet 6 inches long by 5 feet 4 inches wide (inside dimensions), and about 30 inches high. Along the south side of the chamber, on the original surface, was a pavement 6 feet long by $2\frac{1}{2}$ feet wide; no explanation for this is offered. The earth in the vault was mixed with much charcoal, but the walls had been partially demolished by previous excavators and no trace of bones or cultural material was noted. Smith

mound 3, 1 of a group of 4 in the same locale, had also been extensively disturbed, but Fowke (1910, p. 12) was of the belief that a vault had once existed. A few potsherds and a skull fragment were all that remained in the disturbed fill.

Broadhead (1880, p. 352) makes brief mention of a walled mound on the bluffs of Prairie Fork in Montgomery County. The enclosure is described as being 10 feet square with walls 2 feet high when visited in 1859. A few human bones were found. This location (fig. 20, 11) is a few miles north of the Missouri, about opposite the mouth of Gasconade River. So far as published records go, there is apparently still no evidence to contravene Fowke's observation (Fowke, 1910, p. 73) that the Gasconade represents the approximate eastern limit of occurrence of the chambered burial mounds on the Missouri River.

A few miles northeast of this locality, however, on small streams flowing into the Mississippi, similar structures do occur. Watkins (1883, p. 537) reports numerous mounds on the bluffs along Cuivre and Indian Creeks in southern Pike County, Mo. (fig. 20, 13). Some were of earth, others of earth and rock, and a few had rectangular vaults containing human remains. Concerning one of the latter he observes (p. 538) that "in a rectangular vault, 4 by 5 feet, were found the remains of eight skeletons, with a few pieces of pottery." Nearby was "a vault made of flat rocks, in the shape of a coffin, containing a few pieces of cranial bones, very much decayed." Still another "large vault, the dimensions of which we did not have time to determine, contained human remains, much decayed, among which were found three flint arrow-heads, a small vessel molded of clay and burnt, and a pipe carved out of steatite, having upon its front a figurehead."

In the extreme northern part of the county, on a ridge between Salt River and the Mississippi (fig. 20, 15), Broadhead (1880, p. 351) noted rough limestone walls that "inclosed two vaults, each 9 feet square, and from 2 to 3 feet in height." Presumably, as Fowke infers, Broadhead thought that the two chambers comprised a single burial place. One of the chambers, vault A, had a narrow opening, apparently a walled passage, leading out of one corner; this has the legend "Rock removed" on the original sketch (Broadhead, 1880, fig. 1). Bones only are mentioned as having been found. Broadhead stated that other similar tombs had existed in the county but the stones had been hauled away for building purposes. It is of interest in this connection to learn that farther west on Salt River, in western Ralls County (fig. 20, 14), other multicelled stone burial structures have been reported (Hardy and Scheetz, 1883). Thus, of Wilsons Knob on the left side of Salt River, these authors say (p. 536) that—

its crest is about 120 feet long, completely covered with stone to the depth of

several feet, the pile being about 20 feet wide. On examination, made recently, it was found to have been originally a row of burial-places, nine in number, circular in form, each from 8 to 9 feet in diameter (inner measure), contiguous to each other. The remains of the walls still stand to the height of about 20 inches. Judging from appearances, each would seem to have been of a conical or dome-like form. They were composed wholly of stone, and the remains found in them were almost wholly decomposed.

On the top of an opposite ridge to the west is another row, four in number, similar to those just described, except that the cists are square instead of circular, the sides being equal to the diameter of the former. In these also only small fragments of bones could be found.

Nearby, a mound opened in 1853 (Hardy and Scheetz, p. 535), "was made wholly of stone; near the middle lay a single skeleton . . . extended at full length, with head to the west. A dry wall was laid up around the remains 1½ feet high, and this covered with large flat stone, on which the remainder were thrown indiscriminately."

In another mound, one of four on Round Knob (Hardy and Scheetz, p. 536) "40 years ago portions of a dry wall still were standing, 4 to 5 feet in height."

From these accounts, it appears that single chambered mounds, as well as others containing two or more vaults, are a definite feature of the archeology of the Ralls-Pike County locality. It is not altogether clear from the brief descriptions given whether the Wilsons Knob mound and similar remains resulted from the accidental coalescence of a series of closely crowded but separately built single tombs or were actually constructed as multiple affairs, but the latter is certainly a possibility. In this event, I should be inclined to accept Fowke's verdict that the stone structure near Louisiana, in Pike County (Broadhead, 1880, p. 351; Fowke, 1910, pp. 75-81), was probably another burial place of the same general type as the multiple mounds indicated for Ralls County.

Outside the geographical limits of present Missouri records of stone vault mounds are few, scattered, and sometimes of uncertain worth. Recent excavations by the University of Chicago have revealed their presence on the left bank of the Mississippi about 7 miles below Quincy, in southwestern Adams County, Ill. (fig. 20, 21). This is within 25 miles of the vault mound groups just described for Ralls and Pike Counties, Mo. I am indebted to Dr. Georg Neumann (letter of January 31, 1940) for data on this work, not yet published. Unlike any of those so far reported from Missouri, the Adams County mounds were in the river bottoms at the foot of the bluffs. It appears that there were seven chambers, of rectangular, quadrilateral, and irregular outline. Three of these, B, D, G, were in individual structures; A and F comprised a single 2-chambered mound; C and E, from the sketch furnished, were either in a similar double mound or else in two distinct but adjoining mounds. A, a rectangular enclosure, had indi-

cations of a doorway at one end; B had a passageway with steps. Artifacts included a cord-marked grit-tempered pot with vertical rim, rounded shoulder, and conoidal base; two grit-tempered clay elbow pipes; part of an unfinished limestone effigy pipe; the tip of a flat bone needle; a perforated dog's tooth; a tubular columella shell bead; a flat shell effigy; a limestone discoidal; and several stemmed points.

Just south of Albany, in Whiteside County, Ill., on the left bank of the Mississippi (fig. 20, 17), members of the Davenport Academy of Science opened a number of mounds prior to 1875 (Pratt, 1876). These were mostly built of earth, but in one of the largest, which was about 12 feet high and had been dug some time before (Pratt, 1876, p. 102)—

was discovered an inclosure of "dry wall" some ten feet square, containing a number of skeletons supposed to have been buried in a sitting posture, with no indication of any covering or floor ever having been there, save the earth of which the whole mound was composed. A portion of this wall which will remained exposed, we carefully removed for examination, and found it to be built of fossiliferous limestone . . . laid up with tolerable evenness on the inner side. It was about 3 feet high, 2 feet thick at the top, and 3 at the base, piled up loosely, the lower stones broad and flat, rather heavier than one man could well carry, and lying on the clean yellowish sand. Some of the stones had been burned red previously to being placed in the wall.

At about the same time, in the eastern part of the county, on Rock River near Sterling (fig. 20, 18), Holbrook investigated a group of mounds. In the first one opened (1877, p. 535) he discovered—

a dolmen or quadrilateral wall about 10 feet long, 4 feet high, and $4\frac{1}{2}$ feet wide. It had been built of lime rock from a quarry nearby and was covered with large flat stones. No mortar or cement had been used. The whole structure rested on the surface of the natural soil, the interior of which had been scooped out to enlarge the chamber. Inside of the dolmen I found the remains of 8 human skeletons, two very large teeth of an unknown animal, two fossils, . . . and a plummet. One of the long bones had been splintered; the fragment had united but there remained large morbid growths of bone (exostosis) in several places. One of the skulls presented a circular opening about the size of a silver dime. This perforation had been made during life, for the edges had begun to heal.

So far as it is possible to judge from the data available there can be little doubt that the chambered mounds in Adams and Whiteside Counties, Ill., as described above, are of the same type as the stone vaults of central Missouri. The remaining examples indicated on the map (fig. 20, 16, 19, 20) are perhaps more questionable. The first, at Snake Den, in Henry County, Iowa, is backed only by hearsay evidence. The mound, No. 8 in a group of nine, is briefly described by Banta and Garretson (1883, pp. 532-533) as being "5 feet high and 30 feet in diameter. It had been opened previously to the visit of the authors. It is said to have contained a stone vault, in which were dis-

covered human crania, &c. These were very badly decayed. A sand-stone mortar and arrow-points were also found. The burial seems to have been in a sitting posture."

One of the most remarkable stone burial enclosures yet reported was that in mound 16, overlooking East Dubuque in Jo Daviess County, northwestern Illinois (fig. 20, 19). The mound was 65 feet in diameter, with a height of 10 feet. Excavation (Thomas, 1894, pp. 115-116) revealed that—

The first 6 feet from the top consisted of hard gray earth . . . This covered a vault built in part of stone and in part of round logs. When fully uncovered this was found to be a rectangular crypt, inside measurement showing it to be 13 feet long and 7 feet wide. The four straight, surrounding walls were built of small unhewn stones to the height of 3 feet and a foot or more in thickness. Three feet from each end was a cross wall or partition of like character, thus leaving a central chamber 7 feet square, and a narrow cell at each end about 2 feet wide and 7 feet long. This had been entirely covered with a single layer of round logs, varying in diameter from 6 to 12 inches, laid close together side by side across the width of the vault, the ends resting upon and extending to uneven lengths beyond the side walls.

In the central chamber were 11 skeletons, 6 adults, 4 children of different sizes, and 1 infant, the last evidently buried in the arms of one of the adults, presumably its mother. They had all apparently been interred at one time as they were found arranged in a circle in a sitting posture, with backs against the walls. In the center of the space around which they were grouped was a fine large shell, *Busycon perversum*, which had been converted into a drinking cup by removing the columella. Scattered around this were quite a number of pieces of broken pottery.

The end cells, walled off as heretofore stated, were nearly filled with a chocolate-colored dust . . . [which] may be the ashes resulting from burning the fleshy portions of the individuals buried in the central chamber. . . .

The covering consisted of oak logs, nearly all of which had been peeled and some of the larger ones somewhat squared by slabbing off the sides before being put in place. The slabs and bark thus removed, together with reeds and twigs, had been laid over the logs to fill the crevices.

Thomas states further (p. 117) that a similar enclosure had been discovered by previous excavators in a nearby mound, No. 12.

There is probably no good reason for questioning the general correctness of Thomas's record, and the apparently unique character of the burial structure is, in itself, certainly no proof that something of the sort did not exist. At the same time, there are no photographs showing exactly what was found, and it is impossible to determine at this date whether all the features mentioned were actually seen as described or, alternatively, are but one man's interpretation of evidence perhaps not so clear cut originally as the published record would imply. As a minor point, I find it difficult to accept Thomas's suggestion concerning the possible origin of the "chocolate-colored dust" in the end cells. The sample that reached the National Museum is now silvery or whitish

gray in color and apparently contains much wood ash and fine particles of bone. Of the potsherds, if they were saved, no trace has been found. The use of logs and bark in roofing the chamber is somewhat reminiscent of the pole- and bark-covered burial pit in the Nicholls mound in Trempealeau County, Wis. (McKern, 1931a, p. 209).

The Polander Mound group, on the Mississippi River bluffs about a mile above Lynxville, Crawford County, Wis. (fig. 20, 20), yielded at least one example of what appears to have been a slab-walled vault. According to Thomas (1894, p. 71), mound No. 4 "measured 26 feet in diameter and 3 feet high. In the center was a kind of vault formed by a circular stone wall 6 feet in diameter from outside to outside, and 4 feet inside, built in a pit dug in the original surface to the depth of a foot or 18 inches. In this vault or grave was a skeleton very well preserved, doubled up and lying on the right side. . . . The vault was covered very carefully with flat limestones like those of which the wall was built. No implement, ornaments, or relics of any kind were found."

Mound 12 of the same group is said to have contained a like structure surrounding an extended skeleton. Possibly the walled tomb in Allamakee County, Iowa, a few miles to the northwest, represents another. Thomas (1894, p. 107 and fig. 50) describes this as a walled circular vault in which the upper courses of stones were gradually drawn in and finally capped by a single rock. In addition to a seated skeleton it contained "a small earthen vase of the usual globular form." This vessel I have not been able to trace. Several shell-tempered plain and incised (Oneota) sherds from Fish's mounds, now in the national collections, are probably from earth mounds near the vault.

Two parallel dry masonry walls, each 3 feet high, 8 feet long, and 12 feet apart, are reported by Thomas (1894, p. 48) in a mound about 5 miles southeast of Prairie du Chien, in Crawford County, Wis. Between these under a layer of "mortar" was a group of extended skeletons. Except in the manner of erecting the walls, if we may trust the published sketch, there is nothing to justify use of the term vault in this case.

The evidence adduced in the preceding pages has been summarized in table 9. A brief examination of this table will suffice to show the inequalities of the data, and to emphasize their deficiencies where the observations of untrained early day excavators or more recent relic collectors are involved. To what extent the areas in the distributional map (fig. 20) showing no vault mounds represent lacunae in our information rather than true absences is conjectural. This question, obviously, is one that future field studies can probably clear up. Meanwhile, bearing in mind the often dubious and incomplete nature of the record, we may still attempt certain generalizations.

TABLE 9.—*Summary of data on stone-chambered burial mounds*

Site	Location	Mound No.	Reported by—	Num-ber on map, fig. 20	Shape of vault	Dimensions		
						Length	Width	Height
Iowa Point.	Doniphan County, Kans.		Bartos, Dec. 5, 1939	1	Rectangular.	7 feet	4 feet.	
Ross.	do		Wedel, see text.	1	do.	8 feet.	4 feet.	2 feet 6 inches.
Pearl.	do		do	2	Quadrilateral.	6 to 7 feet.	(?)	(?).
Do.	Platte County, Mo		Fowke, 1922, p. 152	1	Rectangular.	5 feet 6 inches.	2 feet 6 inches.	2 feet 6 inches.
Nolan.	do	C	Wedel, see text.	3				
Do.	do	D	do	4	Quadrilateral.	7 feet 4 inches.	7 feet 2 inches.	2-3 feet.
Do.	do	A	do	4	Rectangular.	9 feet 9 inches.	6 feet 9 inches.	1 foot 10 inches.
Do.	do	B	do	4	do.	8 feet.	7 feet 6 inches.	2 feet 6 inches.
Do.	do	O	do	4	do.	7 feet 3 inches.	6 feet 6 inches.	2 feet.
Do.	do	D	do	4	Quadrilateral.	7 feet 6 inches.	7 feet 2 inches.	2 to 2½ feet.
Babeck.	do	B	do	4	Square	6 feet 6 inches.	6 feet 6 inches.	1 foot 8 inches.
Young.	do	1	do	5	Elliptical.	10 feet.	9 feet 6 inches.	1 foot 6 inches.
Brenner.	do	1	do	6	Quadrilateral.	10 feet.	8 feet.	3 feet 4 inches.
Do.	do	2	Broadhead, 1880, p. 352.	6	Square	7 feet 9 inches.	7 feet 9 inches.	3 feet.
Do.	do	3	Broadhead, 1880, p. 353.	6	do.	7 feet 9 inches.	7 feet 9 inches.	3 feet.
Do.	do	1	Fowke, 1910, p. 79.	6	Rectangular.	8 feet 4 inches.	8 feet.	3 feet.
Do.	do	6.	Broadhead, 1880, p. 354.	6		7 feet 9 inches.	7 feet 9 inches.	
Do.	do	2	Fowke, 1910, p. 71.	6	Square	8 feet.	8 feet.	3 feet 8 inches.
Do.	do	1	West, 1877b, p. 16.	6	Rectangular.	7 feet 6 inches.	8 feet.	3 feet.
Do.	do	2.	West, 1877b, p. 17.	6	Square	8 feet 6 inches.	8 feet 6 inches.	3 feet 6 inches.
Do.	do	5.	West, 1877b, p. 18.	6	do.	8 feet 6 inches.	8 feet 6 inches.	4 feet.
Keller.	Clay County, Mo	1	Fowke, 1910, p. 67.	6	(?)			
Do.	do	2.	do.	6	Square	7 feet 6 inches.	7 feet 6 inches.	2 feet 6 inches.
Do.	do	3.	Fowke, 1910, p. 68.	6	Rectangular.	8 feet.	6 feet 9 inches.	2 feet 2 inches.

TABLE 9.—*Summary of data on stone-chambered burial mounds—Continued*

Site	Location	Mound No.	Reported by—	Num-ber on map, fig. 20	Shape of vault	Dimensions		
						Length	Width	Height
Birmingham	Clay County, Mo.		Wiedel, see text	6	Quadrilateral (?)	(?)	(?)	2 feet 2 inches.
Warrensburg	Johnson County, Mo.		Stevenson, 1878, p. 107. Anon., 1878, p. 23.	7	Rectangular	11 feet	9 feet	6 feet.
Kurtz	Howard County, Mo.		Fowke, 1910, p. 63.	8	{Up: rectangular Lo: (?)	7 feet 9 inches	2 feet 8 inches	1 foot 9 inches.
Baumhoefer	Boone County, Mo.	1	Fowke, 1910, p. 54.	9	Rectiform	(?)	(?)	(?).
Hinkson Creek	do		Fowke, 1910, p. 54.	9	Rectangular	14 feet 1	10 feet 1	2 feet 8 inches.
Bo 1	do	1	Ficklin, 1894, p. 144.	9	Quadrilateral	9 feet	8 feet	3 feet.
Bo 4	do	2	Harrington, 1938	9	Rectangular	7-8 feet	5-3 feet 6 inches	1 foot 8 inches.
Bo 5	do		Berry et al., 1938	9	Subcircular	8 feet	8 feet	2 feet.
Dawson	do	9	do	9	Rectangular	10 feet	8 feet	2 feet.
Do	do	9	Fowke, 1910, p. 33.	10	Rounding	9 feet 6 inches	7 feet	2 feet 9 inches.
Do	do	11	Fowke, 1910, p. 36.	10	Subrectangular	9 feet	7 feet	3 feet 2 inches.
Do	do	13	Fowke, 1910, p. 39.	10	{Up: — Lo: quadrilateral	5 feet 3 inches	7 feet	3 feet 6 inches.
Ewing	Cole County, Mo.	6	Fowke, 1910, p. 14.	22	Rectangular	11 feet 2 inches	4 feet 6 inches	1-3 feet.
Do	do	7	Fowke, 1910, p. 16.	22	do	7 feet 6 inches	7 feet	1½-4 feet.
Montgomery County, Mo.			Broadhead, 1880, p. 352.	11	Square	8 feet 6 inches	10 feet	2 feet.
Smith	Gasconade County, Mo.	3	Fowke, 1910, p. 12.					
Uffman	do		Fowke, 1910, p. 9.	12	Rectangular (?)	5 feet 6 inches	5 feet 4 inches	2 feet 6 inches.
	Pike County, Mo.		Watkins, 1883, p. 538.	13	do (?)	5 feet	4 feet	
	do		Broadhead, 1880, p. 351.	15	Square	9 feet	9 feet	2-3 feet.
Round Knob, etc.	Ralls County, Mo.		Hardy and Scheetz, 1883, p. 535.	14		(?)	(?)	1½-5 feet.
Wilsons Knob	do		Hardy and Scheetz, 1883, p. 536.	14	Circular	8-9 feet		1 foot 8 inches.
Near Wilsons Knob	do		do	14	Square	8-9 feet		(?).

Site	Doorway	Type of burials				Artifacts	Remarks
		Crema- tion	Exten- sion	Bun- dled	Frag- menta- tion		
-----	Walled; E.		x			None.	Excavated without records.
-----	No.		(?)			do.	
-----	(?)			x			Seen, not excavated.
Iowa Point						Stone balls, antler rubbing tool	Fire-reddened stones in wall.
Ross	Walled; S.	x	x		x	No record.	No signs of burning; excavated without records.
Pearl	do.					None.	Corners "tied."
Nolan	Walled; E.		x				Fill contained rocks, burnt earth, charcoal.
Do.	Walled; S.	x	x		x	1 inclusive and 5 intrusive pots	Excavated without record.
Do.	Walled; SE.	x					Previously excavated.
Do.	Walled; SW.					2 pots, arrowpoint, mussel shells	
Babcock	S.					2 grit-tempered sherds.	
Young	Walled; S.	x					Burnt clay, charcoal, etc., in fill.
Brenner	Walled; (?)						Burnt clay, charcoal, etc.; "cremation vault."
Do.	do. (?)	x			x		
Do.	E.	{					Flagstones in fill.
Do.	Walled; E.	x			x		
Do.	No.						
Do.	Walled; S.				x		
Do.	(?); S.	(?)			x		
Do.	do.	x			x		
Do.	do.	x			x		
Keller	Walled; S.					Ochre.	Burnt clay, wood ash, charcoal in fill.
Do.	do.	x					Do.
Do.	do.	x					Previously dug and partly demolished.
Do.	do.	x					Burnt earth and stones in fill.
Birmingham	(?)					Pottery, stone pipes, mica, conch shell, flints, etc.	Previously dug without record.
Warrensburg							17 skeletons in 1 mound.
Kurtz		{				1 pot, 3 tubular shell beads 1 inch long.	{ Small vault built over larger of un- determined size and form.

No.	x	x	2 seashell ornaments.	Vault underlain by cist with extended burial.
Baumhoefer				
Hinkson Creek			3 or 4 broken pots, 3 pipes, celt, shells.	Pockets of burnt clay.
Bo 1	x		None in vault.	Flagstone floor.
Bo 4	x	x	Clay pipes, sherds, etc; provenience unstated.	
Bo 5	x	x	Antler cylinders, bone awls, beads, flints, etc.	Slab floor; underlain by cist grave with extended burial.
Dawson			5 broken pots.	Vault underlain by 2 extended burials.
Do	x		2 pots and 3 bone beads; other artifacts above and outside vault.	Pots, pipes, etc. from mound outside vault.
Do			{Seashell beads and pottery; bone and shell beads, 3 whole and several broken pots.	Small vault built over larger.
Ewing			11 tubular columellas; beads.	Burnt earth and slabs in fill.
Do	x			Previously opened without records.
Smith				Previously dug without records.
Uffman				Floor partly paved; much charcoal in fill.
			Pot, pipe, arrowheads from one vault.	Mentions 3 vaults.
Round Knob, etc.				2 vaults previously opened, no records.
Wilsons Knob	x			"Dry walls" in two mounds.
Near Wilsons Knob				9 contiguous circular vaults.
Snake Den				4 contiguous square vaults.
Albany				Nature and identity uncertain.
Sterling				Some stones in wall burned red.
East Dubuque				Slab-covered; 1 skull trepanned (?).
Polander				See discussion.
Spencer (A79)				Similar structure in mound 12.
			Pottery, shell, bone, and stone artifacts.	See text.

In the first place, it appears that mounds containing stone-walled or "dry-masonry" burial chambers are most numerous along the Missouri River from, approximately, the Nebraska-Kansas State line downstream to the Gasconade River in Gasconade County, Mo.—a total spread, by river, of just over 400 miles. Extended surveys in eastern Nebraska (see esp. Strong, 1935, pp. 175–211; and Hill and Cooper, 1938) have brought no examples to light; southwestern Iowa and extreme northwestern Missouri have yet to be heard from. On present information it may be suggested that the type does not occur in the Missouri Valley north of the fortieth parallel. Convincing evidence for the lower 100 miles of the Missouri, from the Gasconade to the Mississippi, has not yet been advanced. Along the Mississippi and on its tributaries, vault mounds have been reported in lesser numbers, chiefly within a radius of about 35 miles from the mouth of Salt River in Pike County, Mo. Scattering occurrences elsewhere include mounds on the lower Rock River and in Jo Daviess County, Ill., in Crawford County, Wis., and perhaps in Allamakee and Henry Counties, Iowa. If we except these last mounds, all vaults of which I have found record, on the Mississippi as well as on the Missouri, lie south of the fortieth parallel, which is, in other words, the Kansas-Nebraska line extended.

In the Missouri Valley, with which we shall hereafter be primarily concerned, the great majority of reported vault mounds occur on the north, or left, bank: they are rarely found more than a few miles from the Missouri itself. Whether this has a physiographic or geologic basis, as for example access to better building stone, or is due to other factors such as inadequate sampling, I am not able to say. It is of interest to note, further, that nearly all the known occurrences south of the fortieth parallel, when plotted on a map (fig. 20), fall into one or another of three regional subareas. Thus, three circles of about 40 miles radius each, with their respective centers at Kansas City, at the mouth of Osage River, and at the mouth of Salt River, would include all save a few isolated mounds in Doniphan County, Kans., and the Warrensburg group in Johnson County, Mo. Whether future work will add other focal areas in the north, on lower Rock River, Ill., or at the juncture of the Wisconsin and Mississippi Rivers is problematical. For that matter it is not certain that the three subareas set forth above will prove valid as field studies progress. However, since the mounds included in each exhibit certain mutual similarities as contrasted to the structures in other subareas, it seems possible that these groupings will ultimately be shown to have more than mere geographic significance.

In the Kansas City subarea, of which Platte and Clay Counties, Missouri, are best known, both stone vaults and earth mounds occur. The former have been reported and described only from sites north of

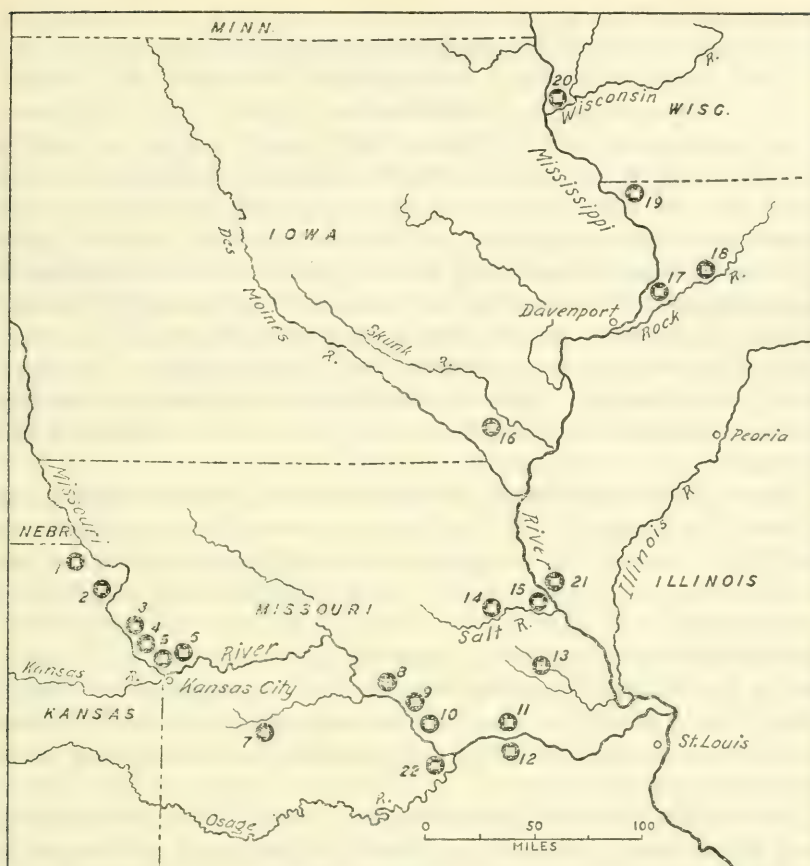


FIGURE 20.—Distribution of mounds containing stone-walled burial chambers.
For identification of numbers see table 9.

the Missouri River; the latter are to be found apparently on both sides. The vaults comprise groups of from two or three to fifteen or more, and in several instances these clusters also include earth mounds. Where the two types occur together, however, as at Line Creek and on Pearl Branch, the vaults are more numerous, and earth mounds may be thought of as atypical. The vaults are usually well built, with inner faces vertical or nearly so, and corners nicely squared. Since they seem to have been erected on previously cleared areas, the carefully laid courses of stone forming the inner face could be backed up with other heavy slabs and blocks which resulted in a wall as much as 5 or 6 feet thick at the base.^{13a} Highly characteristic are entrance

^{13a} The stability of these structures is well illustrated in the case of Brenner No. 2 at the mouth of Line Creek. There is no certain record as to when this was first explored, but it was reopened by Fowke in 1907 and not again filled in. When I first visited it in 1937 the north wall, except for the tumbled uppermost layers of rock and a trifling disturbance from tree roots, was practically unchanged from the view reproduced by Fowke (1910, pl. 13).

passages flanked by coursed wing walls and opening usually in a general southerly direction. Most of the vaults contain quantities of hard burned earth and charcoal, and often some of the stones in the walls appear to have taken on a red color due to great heat. Human remains are almost invariably disarticulated, usually fragmentary, and in many instances are partially or wholly charred. Cremation was evidently the rule; this must often have been done outside the vault, though fires were sometimes maintained within also. Burials in the flesh, either flexed or extended, are exceptional. Grave furniture of any sort is extremely rare. The last two points are noteworthy in view of Curtiss's findings, and the more recent observations of Fowke, Shippee, and myself (Putnam, 1880, p. 718; Fowke, 1910, p. 72; *supra*, p. 137), which indicate a relative abundance of artifacts and a definite tendency toward interment in the flesh in the earth mounds of this district.

In central Missouri vaults evidently occur in some numbers along with earth mounds. From Fowke's observations I get the impression that the vaults in any given group are usually in the minority. Thus, at the Ewing group 2 mounds in 7 contained chambers; at Smith's 1 in 4; at Dawson's 3 (or 4?) in 15 (Fowke, 1910, p. 11, 12-18, 26-42). These groups are comparable in number of mounds and in area covered to the Brenner-Keller and Pearl Branch groups above Kansas City. I have found no record of any mound groups in the central region where the vaults outnumber the earth mounds as they do in the western groups.

The vaults in the central area show less care and skill in construction than those about Kansas City. Fowke (1910, p. 35) noted that the walls usually leaned outward so that the chambers were wider at the top than at the bottom. This is perhaps due to the frequent use of earth and rock instead of the massive all stone backing characteristic farther up the Missouri. Entrances are uncommon; where present, they are little more than gaps at one side, and wing walls have not been reported. Slab floors or pavements are suggested in some instances. Burials include flexed and extended, as well as fragmentary bones and cremations. Artifacts, while not abundant, have been taken from several mounds in Boone County. They include pottery, pipes, and objects of stone, bone, and shell.

The mounds at Warrensburg, if we may trust the descriptions, would seem to affiliate with this central area—doorways are not mentioned, but a number of artifacts are. Geographically, they lie a little closer to Kansas City than to the mouth of Osage River, but as has already been pointed out they are on the Blackwater River, which mouths only a few miles above the Osage.

It is difficult to characterize the third, or eastern, subarea, if indeed it is actually distinct from the second. Early reports suggest the pres-

ence of multichambered stone mounds, but structural details are wanting. Neumann's findings indicate that doorways are no more common than in central Missouri. Burial types are still largely unknown. As in central Missouri, artifacts seem to be more common than at Kansas City.

In relatively few instances is it possible to find adequate published descriptions of the cultural materials known to have been recovered from the stone vault mounds of the Missouri region. Elsewhere in this report I have described two small grit-tempered rocker-roughened vessels of Hopewellian type excavated by amateurs at Babcock mound B near Waldron, Mo. (see also Wedel, 1938, p. 104 and pls. 7B, 8). In the same locality, from Nolan mound C, we recovered one small grit-tempered amphora and five intrusive shell-tempered pots of Middle Mississippi type. Aside from the last six specimens, my stone-vault mound excavations in Platte County netted only 3 stone balls and a cylindrical antler rubbing tool from Pearl mound C, and two small plain grit-tempered sherds from Young mound 1. Fowke's investigations in the Brenner-Keller group opposite Kansas City seem to have produced nothing that is now extant.

Through courtesy of the Missouri Historical Society of St. Louis, I have been able to examine a number of the specimens recovered by Fowke in Boone County but not figured in his report. These include nine whole and restored, and several fragmentary, pottery vessels from stone vaults, as well as sherds, pipes, and chipped-stone artifacts apparently from nearby earth mounds. Unfortunately it has been impossible to track down all the specimens mentioned in Fowke's field catalog and in his report. Study of the vessels has been further hampered by the fact that they were treated with an extremely adhesive resinous home-made fixative, which in many cases completely obscures the surface. Attempts to remove this coating with acetone were unsuccessful, and mechanical removal was given up when it became apparent that the pottery was too friable to permit separation of the fixative from the vessel without destroying the original surface.

The nine whole and restored pots are all from the Dawson mound group near Hartsburg and, if we may trust the catalog, include three each from mounds 9, 11, and 13. They are apparently of the type referred to by Fowke (1910, p. 31) as "cocoanut pot" . . . having a pointed bottom, resembling in shape a cocoanut with one end cut off . . ." All are presumably grit tempered, though in one or two instances freshly broken surfaces showed no visible inclusions. Color is variable including dark gray, light gray, reddish brown, and buff. Surfaces are plain and smooth, except for one specimen that bears a faintly incised "lazy N" just below the rim (pl. 44, *a*). Another vessel has small conical protuberances $\frac{1}{4}$ inch long below the lip (pl.

44, *e*); originally there were six of these. The vessels are characteristically small, varying in height from 87 to 100 mm., in diameter from 92 to 130 mm. Six representative jars from this series are shown in plate 44, which well illustrates the uniformity in shape, size, and general appearance.

It is probable that among the broken and unrestored vessels in Fowke's collection from the stone vaults, additional types will come to light. One of these, cataloged as pot 47 from Dawson mound 13, shows cord-roughened surfaces and suggests a more tapering base than the pieces described above. From Dawson mound 5 came a square-mouthed pot with cord-roughened exterior and subconical base; another with square mouth, but having a globular body, is from Granman mound 3 in Gasconade County (Fowke, 1910, p. 9 and fig. 1). Both of these mounds were of earth; so far as I could learn, no square-mouthed vessels were found in the vaults, though cord-roughening evidently occurred.

In addition to the pottery noted above, Fowke recovered at least one elbow pipe of clay from the vault in Dawson mound 11. Outside the vault, in the same mound, were found two more pipes—one of chalk, the other of clay (Fowke, 1910, figs. 7 and 8). Chipped stone artifacts seem to have included mostly medium to large stemmed projectile points, a few knives, and scrapers. I have no details concerning the reported shell and tubular bone beads.

Results of the excavations conducted by the University of Missouri in this same region parallel in general the findings of Fowke. There are no whole pots, but the sherds may well be from vessels similar to the plain grit-tempered ones from the vaults in Dawson mounds 9, 11, and 13. Here again clay elbow pipes, medium to large stemmed points, and worked bone and shell are reported (Berry et al., 1938), as are socketed antler cylinders and a shaft wrench (?). It is suggested by these workers (p. 33) that "the main vault, with its cultural contents . . . is a component of some phase of the Woodland pattern."

The cultural material mentioned by Watkins (1883) as coming from a vault in Pike County, Mo., is nowhere described. Neumann's excavations only a few miles away, across the Mississippi River in Adams County, Ill., yielded a number of artifacts. These include a cord-roughened grit-tempered pot, two clay elbow pipes, stemmed projectile points, and specimens of ground stone, shell, and bone. Neumann (letter of January 1, 1940), speaking of the pottery, notes that "every piece of it was Woodland ware resembling eastern Algonkin pottery more than it does the highly developed Hopewell. . . ."

If the cultural material from stone vaults is scanty, surviving skeletal remains with real comparative value are even rarer. In

Platte County human bones from Pearl mound C include three measurable female crania, which give cephalic indices of 74.0, 75.4, and 76.7. Three male skulls from Young mound 1 have indices of 72.7, 72.7, and 75.9. From Babcock mound B came two damaged skulls, also apparently of dolichocephalic type. Long bones in these mounds indicate a population of medium stature (est. 156–160 cm.), much less robust in body build than the historic Siouan groups in the same locality. Brenner mound 2, just east of the Renner village site, yielded a dolichocephalic male skull, showing a slight frontal deformation (Hrdlička, 1910, p. 109) similar to that on some of the Babcock mound B specimens. It would appear that the available crania from the stone vaults of this district have in common a dolichocephalic index and slight deformation. In these respects they differ strikingly from the skulls found at the Steed-Kisker burial ground near Farley and resemble certain specimens reported from western Illinois.

The skeletal material obtained by Fowke in central Missouri is both fragmentary and poorly documented. Hrdlička (1910, p. 103) states that “most of the crania are of the dolichocephalic, Indian type. Two or three of them are extreme forms in this respect, suggesting similar specimens recovered in New Jersey from the burials of the Delawares. A close general resemblance exists between the dolichocephalic Missouri skulls and those from the mounds along the Illinois River . . .” Measurable skulls, however, are rare. From Dawson mound 14 (stone vault?) was taken a female skull with cephalic index of 69.5; from Baumhoefer mound 1 an adult male cranium gave an index of 72.2; and from Kurtz mound 1 came a female skull with index of 90.1. Artificial deformation is not mentioned.

Neumann, who examined the skeletal remains returned to the National Museum by Fowke, as well as those obtained more recently by myself and other persons from stone vaults near Kansas City, observes that “in physical type the vault grave series resembles that from Ohio Hopewell mounds and some Central Basin mounds in Fulton County, Illinois, but not especially the highly developed Illinois Hopewell. . . . The same type as from the vault graves (Hrdlička’s Algonkin) is found in the mounds of the Tampico (Maples Mills Focus) manifestation in Fulton County. . . .”

Summarizing, we have seen that the stone vaults, considered from the standpoint of structure and cultural contents, apparently divide themselves into at least two, and possibly three, regional subgroups. The westernmost of these, centering at Kansas City, is characterized by well built structures with walled entrance passages, by disarticulated skeletal remains frequently showing evidence of burning, and by a marked scarcity of associated grave offerings. Where artifacts have

been found, they include pottery of Hopewellian type (Babcock mound B) or of more generalized type (Nolan mound C, see pl. 36a); and such nondiagnostic objects as antler cylinders and stone balls. In at least one instance (Nolan mound C), Middle Mississippi pottery types occurred intrusively. In central Missouri the vaults were much less carefully built, usually lack entrance passages, contain primary extended and flexed as well as disarticulated burials, and yield cultural material in a greater number of instances. The grit-tempered plain "coconut pots" collected by Fowke bear a closer resemblance to Woodland types than to those of any other manifestation in the area with which I am acquainted. The apparent, if occasional, presence of cord-roughened vessels leads me to believe that the people responsible for the vaults also erected the more numerous earth mounds nearby, wherein cord-roughened and square-mouthed pottery has been found. Heavy clay elbow pipes and stemmed projectile points likewise are reminiscent of Woodland traits. At the same time, shell spoons, ornaments of *Busycon* shell, and perhaps the frequency of grave goods might be evidence of Mississippi influence. As to specific similarities, the cultural complex found in the central Missouri vault mounds seems at present to have its nearest relationship with the so-called Tampico phase of the Woodland in Illinois. There are reasons for supposing that the vaults in our third subarea, centering in Ralls and Pike Counties, Mo., and in Adams County, Ill., may belong with the central Missouri vaults. Here, too, entrance passages are rare or absent, and artifacts seem to be a little more common than in the western mounds. Distinctive, apparently, are the multiple or conjoined vaults reported by Hardy and Scheetz (1883, p. 535) and more recently by Neumann (letter of January 31, 1940).

As regards physical type, the extremely scant data indicate a long-headed population throughout, with slight frontal deformation reported only in the Kansas City locality.

My interpretation of the incomplete and sometimes untrustworthy evidence detailed in the preceding pages and summarized immediately above can be stated briefly. I am of the opinion that at least two ethnic groups, closely related physically and predominantly long-headed, but bearing fairly distinct inventories in material culture, were involved. The well-built structures at and above Kansas City—our western subarea—probably affiliate with a local Hopewellian-like group whose village remains are represented by the Renner and related occupational sites in the immediate locality. The cruder but often better furnished structures in central Missouri, together with many of the associated earth mounds nearby, are the remains of a less specialized, Woodland people whose relationships may eventually prove to be with some such easterly manifestation as that termed the Tampico

phase of the Woodland in Illinois. I should expect a similar authorship for the multiple and single vaults in Pike and Ralls Counties, Mo., and Adams County, Ill.

Whether all the stone vaults were erected at about the same general period, that is, within the space of two or three generations, I am unable to state. Neither have I any convictions regarding the direction in which the vault-building idea traveled, or in which locality it first appeared, or from what it developed. In Boone County Berry et al. (1938) found evidence of an earlier burial complex in the form of slab-lined cists directly underlying a vault. Fowke (1910, p. 36), on the other hand, found a shallow cist grave built intrusively over a vault in Dawson mound 11. No stratigraphic evidence of an earlier, possibly ancestral, method has been reported in the Kansas City area. Cist graves, so widely used in southeast Missouri, southern Illinois, and in parts of Kentucky and Tennessee, may well have a wide temporal distribution as well—a distribution that preceded as well as followed a relatively brief era of stone vault building farther west. Possibly the use of vaults with coursed walls of stone developed, in some as yet unclear manner, out of the much simpler slab-lined cist. In this event, the more easterly vaults might be the earlier, and those at Kansas City would represent the climax of the trait-complex. On the other hand, the presence of an island of Hopewellian-like peoples near Kansas City, far to the west of their hitherto known range, could be attributed to migration. This, in turn, raises the question of whether such a population, retaining an earlier notion of interment in enclosures within mounds, might have turned from log- to stone-walled tombs in its new habitat. Here, too, one would expect transitional stages of which no trace has yet been reported. For the present I prefer to reserve judgment on this point, but of the two alternatives suggested above, I am inclined to view the Kansas City area as the culmination rather than as the hearth of the stone-vault concept. We may hope that future intensive researches, especially in mounds along some of the little-known portions of the lower Missouri Valley, will eventually resolve these problems and shed further light on one of the most intriguing phases of the archeology of the region.

RÉSUMÉ

The data accumulated in course of the explorations and laboratory studies described in the foregoing pages are incomplete in many particulars. Aside from the deficiencies inherent in any analysis of archeological materials, it should be pointed out that the present paper is based on a survey rather than on a thoroughgoing comprehensive program of excavation. Most of the information on village remains comes from two sites, and at neither did we uncover more

than a small fraction of the area of aboriginal occupation. The greater share of the available time and manpower was given over to excavation; hence it was impossible to make a complete surface survey of the antiquities of the Kansas City area or to follow up all the leads given us by visitors to the diggings and by local collectors. Since there is good reason to believe that archeological horizons other than those examined exist locally, it is not yet possible to outline in detail the story of native occupation in this part of the Missouri Valley. As an initial step toward this ultimate goal, however, we may set forth the salient features of the two newly defined prehistoric manifestations whose presence here at the eastern edge of the plains area was hinted only vaguely or not at all a few years ago.

The Renner site on Line Creek was inhabited by a relatively small group—small, that is, when compared with some of the historic villages of the Pawnee and their Siouan contemporaries in the eastern Great Plains. At the same time, the depth of village debris—sometimes exceeding 2 feet—and the occurrence of numerous old storage pits indicate an occupation of some permanence. The type of habitation is unknown, but there is no evidence of pithouses or earthlodges. This would suggest that surface structures, perhaps bark or mat-covered, were used and that all traces of these have been obliterated by modern agriculture. The native subsistence economy involved horticulture, hunting, and gathering. Maize and beans, of which there is direct archeological evidence, were probably cultivated on the Line Creek bottoms and at the mouths of ravines and draws near the village. The bone hoe, so typical of most Plains corn-growing peoples, is absent, but there are chipped stone artifacts that may have served the same purpose. Mealing slabs and mullers were not found, and the type of milling implement remains conjectural. Of the numerous wild fruits available, only two were represented in our collections. These include the hickory nut and the papaw. Hunting was important, with the deer overwhelmingly preferred to all other forms. Birds, fish, and shellfish were of minor importance. There is evidence that a small form of domestic dog was present.

Implements of warfare and the chase probably included the bow and arrow, the latter tipped with large-stemmed or corner-notched stone points or with conical socketed antler points; the three-quarter grooved polished ax; the ground celt; and numerous chipped trianguloid and delicate flake knives. For skin-working there were stemmed and unstemmed planoconvex scrapers of varied sizes and forms; cylindrical antler rubbing tools; bone beamers made from the metapodial or the ilium of the deer; occasional eyed sewing needles; awls of turkey bone and punches of deer ulna; and, perhaps used in hide dressing, worn lumps of pumice. A large flat needle of split

rib may have been used for the weaving of rush mats. There is little to guide us in the matter of aboriginal dress or the tastes in personal adornment. Imitation perforated bear teeth and longitudinally pierced deer phalanges possibly served in the latter connection.

Of all the native industries practiced at the Renner site that of the potter is most abundantly represented. Typically, the pottery here is grit tempered, of moderate hardness, and has a granular structure. Surfaces are generally smoothed, less commonly imperfectly polished, and rarely cord-roughened. Large vessels seem usually to have had a height exceeding their diameter, a more or less conoidal base, a slightly constricted neck, and an interiorly concave unthickened rim. The lip was generally flattened. Smaller jars sometimes had globular or lobed bodies. Bowls were rare. Decorative techniques included incising (usually on the rim exterior), roughening of the body by means of an unnotched rocker, rare use of the dentate rocker or roulette, the cord-wrapped stick, and punching from the interior to produce bosses on the exterior below the lip. Areas of decoration involved the rim exterior and the body surface generally. The neck, except where overall cord-roughening occurs, is generally plain. The rim exterior typically bears cross-hatched incising (or rocker marks) bordered by a line of punctates; less common are the vertical or diagonal impressions of a cord-wrapped stick, or short strokes from a pointed tool. On the body, all-over edentate rocker roughening is very characteristic, the use of alternate plain and roughened areas separated by incisions less so. Miniature pots occur, as do occasional crudely modeled bird or other zoomorphic forms. Painting is present on but one vessel fragment.

In addition to the more numerous artifact types already given, we may further enumerate the following from the Renner site: Unpaired sandstone abraders, grooved as from sharpening awls, etc.; a bipointed bone object; a multiperforate scooplike piece, of dressed bone or horn; a small zoomorphic bone carving; a small copper celt or adz blade; chipped chisellike objects; drill points; small chipped plano-convex disks; chipped celt (?) blades, or blanks (?); large well made blades; hollowed imperforate funnellike stone and clay objects; a small paint mortar; rough hammerstones, hematite, and (by report) obsidian chips.

The manner of disposing of the dead remains problematical. It is suggestive, however, that on the bluffs east of the Renner site is a large group of mounds, nearly every one of which contained a rectangular burial chamber built up of coursed stone without mortar. These were dug out many years ago; associated cultural objects were rare or absent, and the records of this work which have come down to us do not prove a direct connection between these structures and the

people who dwelt at the Renner site. At the same time, a stone vault of similar type near Waldron has recently yielded, in addition to disarticulated human bones, two small pots virtually indistinguishable from the better grade of ware at the Renner site. At a number of other points in the Kansas City area groups of stone burial enclosures have been found in proximity to village sites whose pottery and other remains are closely similar to those at Renners'. As I have suggested elsewhere in this paper, I am of the opinion that the stone vaults on Line Creek, on Pearl Branch, and elsewhere in the locality, represent the burying places of the people who inhabited the Renner and culturally related sites in the area. This view is subject to modification, or even to abandonment if necessary, in light of future findings. It does not overlook the fact that Shippee found a roulette-decorated pot, a large well-chipped blade, and scraps of native copper in an earth mound west of the Renner village site. These finds suggest that the dead may have been occasionally placed in earth tumuli rather than in stone vaults. As a rule, however, I believe that the earth mounds of the Kansas City area pertain to a different, probably later, archeological horizon.

If, in the above paragraph, the stone chambered burial mounds of the Kansas City area are referred to the correct village horizon, it is noteworthy that the few measureable skeletal remains extant indicate a dolichocranic high-headed population of medium stature. Frontal deformation was practiced, and there is evidence that syphilis was present.

The Steed-Kisker site on Platte River also represents the remains of a small, relatively sedentary, aboriginal settlement. Here the archeological evidences are somewhat more scattered than at Renners', presumably because the village was less compact and occupied a greater area. Directly indicated are rectangular semisubterranean earthlodges with central fireplace, four primary roof supports, and vestibule entrance. Charred maize, sunflower seeds, bits of pumpkin, or squash, and mussel-shell hoes are proof of horticultural pursuits. The muller and inferentially also the mealing slab were present. Papaw seeds and nut fragments show that wild-fruit products were utilized, and deer bones indicate a considerable reliance on hunting. The domestic dog was present.

The range of known artifact types here is rather more limited than at the Renner site, but this is probably due to our relatively smaller sample. Arrowpoints are uniformly small, of chert, with or without side notches. A single crudely ground notched ax was found on the surface. There is reason to believe that boat-shaped paired sandstone arrowshaft smoothers were in common use. Knives included ovoid and 4-edged types, with a few flake forms showing finely retouched edges. For skin-dressing, there were small un-

stemmed planoconvex scrapers, a cylindrical antler rubbing tool, deer ulna awls, and knifelike objects fashioned from scapula blades. Tobacco pipes included a large limestone effigy (lizard head?) specimen, one of disk bowl type, and a subrectangular sandstone form. Other items found are a pierced deer phalange, a worked deer mandible, a socketed antler tip (handle?), graveurs and drill points, a ground stone gouge, a circular sandstone ornament with pierced tab for suspension, hammerstones, pecking stones, hematite, pumice fragments, and twisted 2-ply vegetal-fiber cordage.

Pottery remains from Steed-Kisker have almost nothing in common with those from the Renner site. About 90 percent of the sherds recovered are shell-tempered; the remainder consist of sand- or gravel-tempered fragments. The ware is about equal in hardness to that at Renner, but it has a more flaky appearance in cross section, a more regular and smoother fracture, and does not crumble as readily when immersed in water. Surface color is variable with grays, browns, and buff predominant; the core in nearly all sherds is a slaty gray. Surfaces are smoothed, rarely polished, slipped, or cord-roughened. The characteristic vessel form is a medium to large jar with hemispherical underbody, round or angular shoulder, flat-tish upperbody, constricted neck, low vertical or recurved rim, plain round lip, and, often, two loop handles attached vertically to the lip and upperbody. Less common are vertical-walled bowls with flat bottoms, sometimes with small effigies or effigy heads attached to the rim; round bottomed bowls with curved walls converging toward the mouth; miniature vessels; possibly water bottles and other undetermined shapes. Decoration, other than rim effigies, consists of simple incised rectilinear and curvilinear designs placed usually on and above the shoulders of jars. Other than receptacles, the only fired clay artifact was a broken sand-tempered pipe of bent tubular form.

The dead were buried just below the top of a lofty hill overlooking the village site. Interment was evidently in the flesh, usually in the extended supine position; sometimes flexion or bundle burial of disarticulated bones was practiced. Among the closely massed burials were found a flat-bottomed rim effigy bowl, shell-tempered plain and incised sherds, and several restorable miniature pots which, in all particulars except size, resemble the large utilitarian jars found in the nearby village. Other artifacts included a poorly preserved fragment of *Busycon* shell, possibly the weathered remains of an ornament, and a few small chipped points and other chert objects.

Judged from the few measurable skeletal parts salvaged at this burial ground, the people were more round-headed than those who erected the stone vaults in the Kansas City area. Like the latter, though,

they were of short or medium stature. Head deformation was evidenced and syphilis seems to have been present.

Pottery vessels, potsherds, and other artifacts clearly indicating a basic relationship to the antiquities at Steed-Kisker were noted by us at several other points in Platte County. So far as actual habitation sites are concerned we can mention only the scattered traces along Pearl Branch and on the Missouri bottoms just outside its exit from the bluffs zone. Of more interest are certain inferred mound connections. As stated elsewhere, I regard the large earth mounds of this locality as the product of a native group distinct from the builders of the stone vault mounds. This view is based on the structural dissimilarity between the two types; on the fact that the vaults seem to occur characteristically in groups whereas the earth mounds are about as often found singly; and on the markedly unlike character of the contents from the earth mounds as compared to the vaults. The material reported by Fowke (1910, p. 72) from the Klamm mound, by Curtiss (Putnam, 1880, p. 717) from an earth mound in nearby Clay County, by Shippee (letter of March 30, 1940) from the Avondale south mound, and by myself from the Shepherd Mound (see above, p. 137) is, in each case, relatively far more abundant than anything yet reported reliably from local stone vaults. From the information available concerning the Klamm, Avondale, and Shepherd mounds, moreover, the included pottery did not resemble that at Renner or the extant vault pottery, but it does show very strong similarities to the Steed-Kisker ware. It would be interesting indeed to know more of the "well made pottery" found by Curtiss.

In my opinion, then, the large well-furnished earth burial mounds in the Kansas City locale, such as Klamm, Avondale, Shepherd, and probably that opened by Curtiss, may be tentatively considered as belonging to the general archeological horizon represented by the Steed-Kisker and related local village and camp sites. At Steed-Kisker, however, the burials were not associated with a mound. This may mean that the broader similarities noted indicate a general horizon on which local specializations have arisen. In this case, the custom of erecting mounds over the dead may have been practiced by communities belonging to a slightly variant manifestation—or, in classificatory terms, to a different "focus"—from that disclosed at Steed-Kisker.

Our data, as just outlined, indicate the existence of two fairly distinct major archeological horizons in the Platte-Clay County area. On the one hand is the Renner site, with several little-known but culturally related stations scattered up and down the great bend of the Missouri Valley, and perhaps the grouped stone-vault mounds.

On the other hand is the Steed-Kisker site and, inferentially, the Shepherd, Avondale, and other similar earth burial mounds. Since all these remains occur under essentially identical conditions so far as these concern natural environment, such as climate, topography, fauna, and flora, the dissimilarities in cultural expression cannot be explained by ecological factors. There is, for example, no obvious environmental reason why one group should temper its pottery with shell, the other with crushed stone; or why one should construct stone burial chambers whereas the other buried on natural hilltops or in dirt mounds; or why one should use earthlodges, the other not. In these, as in other details, the two groups differed sharply, though both were primarily horticultural, semisedentary, and possessed a number of parallel or closely similar traits. The observed differences are most readily explained as a result of the different cultural antecedents from which each group sprang. It is to a consideration of these antecedents, as revealed by a comparison of the western Missouri materials with related remains to the east and to the west, that we proceed next.

CULTURAL RELATIONSHIPS

It is now generally recognized that the Missouri Valley and Great Plains, prior to the European conquest, were inhabited by a number of native peoples each of which possessed a more or less distinctive material culture inventory. In the long view, it is undoubtedly true that hunting-gathering economies dominated the region, or at any rate its western portions, during the greater part of its long cultural history, as they did during the late historic period. But most of the so-called typical tribes—the seminomadic bison-hunting Dakota, Cheyenne, Arapaho, Comanche, Kiowa, and Plains Apache—were clearly late arrivals. Along the eastern margin of the Plains were semisedentary agrarian Caddoan and Siouan tribes typifying a mode of life that was older in the area than any of the tribes named. As Strong (1935) first pointed out, the semisedentary Pawnee type of life “most clearly represents the norm of aboriginal culture in the central Great Plains prior to Caucasian interference.” That is to say, the migratory bison hunters were preceded in the plains of Nebraska and Kansas by less mobile groups who lived in fixed earthlodge villages, tilled gardens of maize and beans, manufactured pottery, and possessed a rather wide variety of other arts and industries not readily reconciled with nomadic habits.

The remains of these settled farming communities, designated by archeologists as the Upper Republican culture (or aspect) and thought to be in part ancestral to the Pawnee and other historic village tribes, have been identified westward through Nebraska and northern Kansas

to the Colorado line. Along the immediate valley of the Missouri was a related and contemporary but somewhat divergent manifestation termed the Nebraska Culture (or aspect). Still other variants of this prehistoric horticultural earthlodge-using pattern are found in eastern Kansas, but have not yet been analyzed. Earlier than any of these, as shown by stratigraphic studies at several widely scattered points, are small, often deeply buried sites referred to a little known variant of the Woodland horizon. At present, this is believed to be the earliest pottery-bearing culture stratum in the central Great Plains, but it is not yet clear whether the subsistence economy was based primarily on horticulture or on hunting and gathering.¹⁴ The Woodland, as also the later materials in the trans-Missouri region, were apparently derived from parent stocks to the east, and basically represent western peripheral variants of the maize and pottery horizons of the Mississippi Valley. Because cultural sequences have been established for the region immediately north and west, comparison of the Platte County remains will begin with plains horizons.

To facilitate comparison, I have listed in table 11 the artifact types and other culture elements revealed by our investigations at the Renner and Steed-Kisker sites. This includes practically all named items considered in the foregoing descriptive sections of this report, where additional details can be found concerning the nature of the various entries. Where feasible I have sought to indicate the relative importance of an element by indicating the number of observed occurrences. Where actual numbers are impractical, I have used a plus sign (+) to show that the element is frequently present, a minus sign (-) for infrequent occurrences, and a blank for no known occurrences. Inventories for sites introduced for comparative purposes have been handled in similar fashion.

As pointed out in the résumé above, there is little similarity in our trait inventories for the Renner and Steed-Kisker sites. The resemblances, which may be disposed of here before we proceed to specific site comparisons on a wider basis, involve mainly the subsistence patterns. The inhabitants of both villages practiced horticulture based on maize. Other crops directly evidenced are beans at Renner, pumpkins and sunflowers at Steed-Kisker. The mealing slab, muller, and clam-shell hoe were found only at Steed-Kisker. Both groups drew to a considerable extent on the locally available wild food resources, among which were nuts and papaws as well as deer, turkey, and other game. Also, both used underground storage pits and had domestic dogs. So far as the above items are concerned, both Renner

¹⁴ See Strong, 1935, p. 193; Hill and Kivett, 1941, p. 188; Hill, 1941, p. 7. For further particulars concerning the nature and interrelationships of these and other archeological manifestations in the central Great Plains see Wedel, 1940a, and references therein.

and Steed-Kisker apparently have a great deal in common with the Fort Ancient sites of the Ohio Valley, with Kingston village in Illinois, and with the semisedentary horticultural horizons west of the Missouri.

In other respects the two Platte County complexes shared such elements as the following: Small planoconvex end scrapers, cylindrical antler rubbing tools, ulna punches or awls, sandstone abraders or "awl sharpeners," longitudinally pierced deer phalanges, expanded base stone drill points, hammerstones, hematite, pumice, use of Dakota sandstone, grit tempering in pottery (rare at Steed-Kisker), and a very few other ceramic items. With exception of pumice and Dakota sandstone, most of these traits are of wide distribution spatially and temporally and cannot be taken as proof of direct connections between Renner and Steed-Kisker. The similarities in the pottery complex, as in other aspects of material culture, are heavily outweighed by numerous differences which will be apparent from study of table 11.

THE RENNER SITE

Despite the geographic situation of the Renner site virtually at the threshold of the Great Plains, its strongest cultural affiliations were not with recognized plains archeological horizons. Our data and the antiquities recovered at Renner, when viewed as a whole, are reminiscent of manifestations to the east rather than to the west. There are, to be sure, a number of similarities to some of the materials collected at various prehistoric sites in the trans-Missouri region, but these usually involve artifact types, techniques, or customs so widely distributed in time and space as to have little or no significance where direct connections between specific cultural complexes are sought.

The inferred sedentary mode of life at the Renner site, together with the subsistence pattern based on small scale farming, on hunting, and on gathering, the use of underground caches, and possession of dogs, parallels in general the domestic economy indicated at sites referred to the Upper Republican, Nebraska, Oneota, and other Plains culture complexes. Since the archeological data are still inadequate, it is difficult to say how much further these parallels went in matters of specific detail. The principal crops cultivated—maize and beans—were identical. There is, however, no evidence of the bone hoe at Renner, whereas this tool is one of the most common and constant types in all of the other known aboriginal farming complexes in the Great Plains. With regard to animal foods, the natives at Renner relied far more on deer than on bison, no doubt because the former were both more plentiful locally and easier to obtain. Farther west, in the sparsely timbered Upper Republican habitat,

bison seem to have been relatively more important than the cervids. Such differences, insofar as they reflect environmental factors, are expectable.

Aside from their subsistence economy, the Renner people had little in common with the horticultural Central Plains groups named above. They apparently lacked the earthlodge house type, which in historic times became virtually a hallmark of the settled farming peoples in the central Great Plains, and which is now known to have a long earlier record in the region. Such further items as plano-convex end scrapers, ulna punches or awls, antler cylinders with cut or polished ends, unpaired sandstone abraders, straight and expanded base drill points, chipped celt or adz blades, hammerstones, pecking stones, hematite, and Dakota sandstone occur repeatedly among virtually all the sedentary plains groups as well as at the Renner site. Pumice, undoubtedly collected as flottage on the Missouri River, is less common but has been found in sites of all periods near the stream.

Of more restricted distribution are certain eastern artifact types at Renner that have been recorded but sparingly from the central Great Plains. These include the socketed conical antler arrowpoints, heavy stemmed or corner-notched chert points, $\frac{3}{4}$ -grooved ground ax, ground celts, large eyed needles of split rib (the so-called mat-weaving type), bone beamers, and longitudinally pierced deer phalanges. Antler arrowpoints virtually identical with those at Renner, even to the single basal tang, have been found at the Fanning, Kans. (Oneota), site (Wedel, unpublished field notes, 1937). Specimens lacking the tang have come from the Leary (Oneota) site in Richardson County, Nebr. (Hill and Wedel, 1936, p. 58), and from mound 17 at the Tobias site in Rice County, Kans. (Wedel, 1942). The Tobias site is assigned to the Paint Creek horizon, provisionally identified as protohistoric Wichita. Socketed points with square instead of circular base were recovered at the Wright Pawnee site near Genoa, Nebr. (Hill and Wedel, 1936, p. 58). All these occurrences involve sites and horizons of protohistoric age; except at the Leary site the antler points were associated with glass beads and metal clearly indicating European contacts. I have no record of such objects from prehistoric sites in Nebraska or Kansas.

The large-stemmed chert projectile points characteristic of the Renner site have no counterpart in the trait inventory of other sites so far described in the Central Plains. Specimens have been found, however, on the surface in widely scattered districts, often associated with thick cord-roughened potsherds. They have been tentatively assigned to a Woodland horizon, which, because of the unpromising nature of the sites and the often considerable overburden, has not

been intensively studied. My own investigations in 1939 on Salt Creek in Lane County, Kans., revealed points of this type directly associated with heavy gravel-tempered cord-impressed and embossed pottery in a culture stratum underlying an Upper Republican village site. Pending additional data, we may regard these points as a relatively early type associated characteristically with a western Woodlandlike pottery complex.

Three-quarter-grooved axes of ground stone have been found repeatedly throughout the Great Plains, if we may accept the statements of amateur collectors. The type is most plentiful, apparently, in the eastern portion, diminishing in frequency with increasing distance west of the Missouri. Most of the specimens are surface finds, and the horizon to which they are assignable has remained uncertain. I have been told that grooved axes were found in or on Upper Republican sites on the Republican and South Loup Rivers (Wedel, 1935, p. 199), but their general absence from excavated stations of this horizon leads me to believe they were not characteristically used by the Upper Republican peoples.

Ground celts have been reported at Upper Republican sites in Franklin and Sherman Counties, Nebr. (Wedel, 1935, p. 199; Champe, 1936, p. 265); at St. Helena (Cooper, 1936, p. 47); in Nebraska Culture sites (Strong, 1935, p. 260; Gilmore and Bell, 1936, p. 324); at the Leary site (Hill and Wedel, 1936, p. 44); and at certain Pawnee sites (Wedel, 1936, p. 78). That the Pawnee actually made and used the ground celts said to have been found on some of their village sites is still questionable, inasmuch as the occurrences rest solely on the word of amateur collectors. The butt end of what may have been a small celt was found at the Walker-Gilmore deep site (Strong, 1935, p. 190, pl. 17, fig. 2, *h*). This would carry the type back to the earliest known ceramic horizon west of the Missouri. Like the grooved ax, the celt decreases in importance farther to the west, though it was unquestionably in use by Upper Republican and contemporary groups. Its presence at Oneota sites extends the time range up into the protohistoric period.

Small eyed needles, though not common in Plains sites, do occur occasionally in nearly all parts of the area. Much rarer are the large flat needles made usually of split mammal rib and ranging in length from 20 to 30 cm. Cooper (1936, p. 52 and pl. 20, figs. 4-8) figures the pierced butts of several broken specimens reminiscent of the one large needle from Renner. These are all from sites near St. Helena in northeastern Nebraska, which exhibit strong Upper Republican affinities. Since none is complete, direct comparison with the Renner specimen is impossible.

Beaming tools made from the split metapodial of the deer are extremely uncommon west of the Missouri. So far as I am aware there are no published descriptions of specimens from this region. Several have been found at the Trowbridge site in Wyandotte County, Kansas, culturally very closely related to Renner. Only two other occurrences have come to my attention; both involve fragmentary specimens. One, now in the collections of the Nebraska Historical Society, is from the Lehn site in Howard County, Nebr. The other, in the private collection of G. L. Whiteford, Salina, Kans., was found at a prehistoric village site on Pipe Creek in Ottawa County, Kans. The Lehn site is Upper Republican; the Pipe Creek site is from the same or a related presumably contemporaneous horizon. The second type of bone scraper found at Renner, made from the ilium of the deer, is even rarer. The Trowbridge site has yielded several; otherwise I recall no examples from the Missouri Valley or from the central Great Plains. Jeançon (1923, p. 25 and pl. 25D) reports identical implements from the Chama Valley near Abiquiu, N. Mex.; and Ritchie (1936, p. 46 and pl. 10, fig. 2) mentions one specimen from the Canandaigua site in Ontario County, N. Y.

Dressed toe bones of the deer, pierced lengthwise and presumably used either as appendages on clothing or in the cup-and-pin game, are not a common Plains archeological type. One specimen has been reported from the Walker Gilmore deep site in Cass County, Nebr. (Strong, 1935, p. 192 and pl. 18, fig. 2, *j*). There is one from the historic Kansa site below the mouth of Blue River in Pottawotamie County, Kans. (unpublished field notes, 1937); and I am under the impression that another has been found at the Lehn site, Howard County, Nebr.

The pottery remains at the Renner site are markedly dissimilar to nearly all wares so far reported from the Plains area. The few cord-roughened coarsely grit-tempered sherds and the pointed-base jar with rim bosses (see pl. 3, *a*) resemble certain materials found from time to time at Woodland sites in Nebraska and northern Kansas. Also, the plain recurved rimsherds classed under the final entry in the summary of Renner sherd types (see p. 37) bear a resemblance to some of the less distinctive later wares with "Mississippian" affinities. The great majority of the remains, however, find their closest counterpart not west of the Missouri but in the Hopewellian wares to the east and south.

It should be noted at the outset that the present attempt at a direct comparison between the Renner complex and the easterly Hopewellian materials is beset with difficulties. Despite all that has been said and written on the subject, there is still much diversity of opinion on the part of workers in different areas as to what elements are Hope-

wellian. Some of the traits regarded as characteristic of Elemental and Ohio Hopewell have a comparatively limited distribution, whereas the typical pottery elements, for example, are now known to be exceedingly widespread. This is not the place to attempt an analysis of the Hopewellian complex; all I have sought to do in table 11 is to indicate those elements in Hopewellian sites that are also present at Renner. It is hardly necessary to point out that by this procedure a great many Hopewellian diagnostics are omitted from consideration.

A more serious obstacle is the fact that at the Renner site a village complex alone is represented, whereas elsewhere, with a very few exceptions, Hopewellian rests on finds at burial mound sites. A glance at any published list of Hopewellian determinants will show that almost all the elements concern burial practices that would not be expected to occur in a habitation site. For the northern Mississippi Valley area, at least, Hopewell "culture" at present thus appears to be a cult rather than a well-rounded assemblage of material culture traits such as has been inventoried, for example, for the Fort Ancient horizon. Because my data are not directly comparable to the Hopewellian remains elsewhere, any conclusions drawn from the following comparisons are necessarily tentative and subject to revision or abandonment if and when additional data on the Hopewellian village complex become available.

Turning our attention eastward from the Renner site, we see that the nearest published excavations having to do with Hopewellian remains are those on the Mississippi River bluffs in Louisa, Muscatine, Scott, and Jackson Counties, Iowa. Here, during the 1870's, a number of burial mounds were opened by individuals representing the Davenport Academy of Science (see esp. Proc. Davenport Acad. Nat. Sci., vol. 1, 1876); associated village sites are either undiscovered or undescribed. For the most part the finds here show a much closer similarity to Hopewell burial mounds east of the Mississippi; such items as log-covered tombs, curved base bird effigy monitor pipes with inset eyes, copper beads, axes, and awls, marine shell containers, pearl beads, sheet mica, galena, and silver have no counterpart at Renner. Flat-bottomed pottery jars with embossed rims, punctations, and alternate smooth and roughened areas are indicated. Some of the pottery elements, including vessel shapes (except for flat bases) and decorative techniques, are reminiscent of material from Renner, but I doubt that the resemblances can be taken as evidence of anything more than a common ancestry. Large-stemmed flint projectile points, perhaps the dressed antler cylinders, and an imitation bear tooth from a mound near Albany, Ill., also recall items at Renner.

Much more fruitful is an inspection of the results of recent systematic investigations in the Illinois River Valley. In December

1939, I was able to examine very briefly a portion of the Fulton County, Ill., collections at the University of Chicago. This cursory examination strengthened an earlier impression concerning the close similarity between materials from the Renner site and those from certain Illinois sites. In table 11 the column headed "Illinois Hopewell" is a composite based on the published analyses of various mound and village sites ascribed by Cole and Deuel (1937, p. 202) to the Ogden-Fettie focus of the Hopewellian phase.¹⁵

The pottery types set up for Fulton County Hopewellian sites (Cole and Deuel, 1937, p. 39ff) apparently parallel those at Renner, but they are not identical. With regard to paste, color, tempering, low resistance to moisture, and other technologic details, the prevalent ware at Renner conforms to Cole and Deuel's type 2 (1937, p. 40), but type 2 rim decorations (1937, fig. 6) are comparatively rare in our Renner site collections, and there is no evidence whatever of truncated conoidal vessel bases. Type 3 in Fulton County—further designated as "polished collar and channel" (1937, p. 42)—seems to be virtually identical with some of the thinner harder better made pieces from Renner. In both localities this ware consists of fine, compact, gray paste tempered with whitish grit; it does not crumble readily, and undecorated surfaces are frequently more or less polished. The cross-hatched rims, with a line of punch marks along the lower margin and a plain polished collar or neck zone, are very plentiful at Renner. A single body sherd from Fulton County (1937, p. 47) is described as "ornamented in alternate area style, with the decorated portion filled with rocked rouletting." This technique occurs on several specimens from Renner (see pls. 7, 8). Owing to the limited amounts of this ware reported from Fulton County it is impossible to determine vessel forms or to make further detailed comparisons with Renner.

A single sherd of incised over cord-roughening, similar to Cole and Deuel's type 1, was found at Renner (pl. 7, b).

Disregarding types, we may note that nearly every pottery element found at Renner is also present in the Fulton County Hopewellian

¹⁵ I have used the site analyses here, in preference to the general list of Hopewellian diagnostic traits (Cole and Deuel, 1937, p. 222), for several reasons. In the first place, 25 of the 32 diagnostics are reported only from burial mounds, and fully half of these could not be expected to occur in a village site. The site analyses show that of the 32 diagnostics, four village sites included only the following number each of diagnostic elements: Fv49, 6 elements; Fv88, 1; Fv574, 4; Tv1, 4. The only diagnostic found in all four village sites is the type pottery, with stemmed projectile points and flake knives present in three of the four. Moreover, the detailed analyses indicate the presence of a number of additional elements that, though evidently not regarded as diagnostic, may prove of some significance in determining the nature of the Hopewellian village complex. It is among these presumably nondiagnostic elements, as well as among the four or five diagnostics found in the village sites, that the Renner materials have interesting parallels. The similarities are brought out in the further discussion above.

wares (table 11). The resemblances include such features as paste, amount and nature of tempering materials, fracture lines and surfaces, color, surface finish, rim types, and decorative techniques and designs. From the published data it is impossible to determine whether the large vertically elongate jars with plain necks, cross-hatched and punctate rims, and rocker-roughened bodies (see pl. 4), which are especially characteristic at Renner, also occur in the Illinois Valley sites. To me these specimens suggest a blend in which the amphora shape and inferior technology of Cole and Deuel's type 2 pottery were combined with an upperbody, neck, and rim taken over from the better type 3 ware.

In the matter of nonceramic elements, there are several additional points of similarity. Large, well-made, stemmed projectile points, flint flake knives, and perforated bone needles are common to Renner and the Fulton County sites. There are no platform or monitor pipes from Renner, but the finding of a broken pipe fragment at the nearby related Trowbridge site in Wyandotte County, Kans., suggests that this lack may be due to inadequate sampling on our part. Items found at Renner and also listed by Cole and Deuel in their site inventories, but not regarded as diagnostic, include: Chipped flint disks, flat on one side with a central boss on the other (F^v49; F^v574); socketed antler projectile point with basal barb (F^v574); antler cylinders with polished but not socketed ends (F^v574); snubnose scrapers (T^v1); and figurines of baked clay (F^v49). The chipped flint disks are nowhere illustrated, nor is their size given, but several specimens seen by myself at Chicago do not appear to differ significantly from those at Renner. For the Fouts site (F^v664), under the heading "objects probably Woodland," Cole and Deuel (1937, p. 120) include two "disks of chipped flint, flat or slightly convex on one side, with a central boss on the other showing scars from flakes struck off." This description fits the Renner specimens perfectly. According to Cole and Deuel "similar specimens are found on Hopewellian village sites in Fulton County." What the distribution of the type is otherwise I do not know. Antler projectile points are known from at least one Fulton County Hopewellian site. The presence of socket and barb in the Hummell site specimen is reminiscent of identical features on the Renner points. At T^v1, Cole and Deuel (1937, p. 190) mention "antler tips, broken off, 2 socketed but not for projectiles." One wonders how these differ from projectile points but seeks in vain for an explanation. The antler cylinder is presumably similar to several specimens from Renner. No comparisons are possible between the flat perforated animal rib needles reported from F^v49 and T^v1 and the large needle from Renner. Two grooved axes found at F^v88 are

attributed to either the Black Sand or the Hopewellian component at the site (Cole and Deuel, 1937, p. 150).¹⁶

In southwestern Wisconsin burial mounds assigned to another variant—the Trempealeau focus—of the Hopewellian phase are scattered along the left bank of the Mississippi from Trempealeau County southward to, or beyond, Crawford County (McKern, 1931a). Relatively few of the artifacts listed by McKern (p. 235) for the Trempealeau sites can be duplicated at Renner. With pottery omitted for the moment, copper celts, flint flake knives, knives and projectile points of chipped stone, and large chipped stone implements about complete the inventory of similarities.¹⁷ Some of these items, moreover, are of rather general nature and in themselves do not constitute proof of a common genesis. The few specimens found at Trempealeau village and campsites indicate a greater variety of stemmed projectile point forms (McKern, 1931a, pl. 37) than occurs at Renner, but the scrapers, knives, and drill points are much the same. Here again our comparisons are suggestive rather than definitive, since the overwhelming bulk of Trempealeau materials is from burial mounds rather than habitation areas.

In regard to pottery remains there are a number of close similarities between the Wisconsin sites and Renner. Trempealeau pottery, to judge from the limited collections so far described (McKern, 1931a, p. 223), is characteristically grit-tempered, with granular structure and a ragged fracture; surfaces vary from rough to "decidedly smooth." Two general types seem to be indicated. The rougher ware includes vertically elongate jars with conoidal base, slightly contracted upper walls, and a weakly flared rim. The rim is decorated with vertical or diagonal rouletted or stamped lines below which occur indentations or bosses. Some of the illustrated specimens appear to have cord-wrapped stick impressions (McKern, 1931a, pl. 43, fig. 9; pl. 42, extreme right). In shape these vessels (pl. 42) suggest the large jars at Renner, though the presumably associated rim decorations are found on only a few pieces at the Platte County site. A finer ware in Trempealeau is inadequately represented but includes vessels with rounded base, squarish body, short plain neck, and outwardly folded (channeled ?) vertical rim. Here the rims bear incised cross-hatching below which is a row of punctates. Body decoration involves alternate smooth and roughened areas, the latter produced by means of the dentate rocker. This finer ware undoubtedly corresponds to the thin, hard, often polished sherds and vessels at Renner (cf. pl. 8, *a-c*), though

¹⁶ A perforated bone imitation bear tooth is reported by Baker et al., 1941, p. 11, from a Hopewellian mound in the lower Illinois Valley.

¹⁷ In the National Museum collections are a number of real and imitation perforated bear teeth from mound 5, De Soto, and from a mound at Warners Landing, both in Vernon County, Wis. (see also Thomas, 1894, pp. 78-79). These sites are within the geographic range of, and perhaps can be assigned to, the Trempealeau horizon.

the rim type and decoration are found also on many of the larger rougher jars at the latter site. As at Renner, cord-roughening is uncommon in Trempealeau pottery. In short, the basic techniques and procedures in Trempealeau ceramics are virtually all duplicated at Renner; differences between the two localities are concerned with details rather than with fundamentals.

Another northern peripheral variant of the Hopewellian culture has been described by Quimby (1941) as the Goodall focus. This comprises ten burial mound sites scattered east of the lower end of Lake Michigan from the Muskegon River in Newaygo County, Mich., southward to La Porte County, Indiana. Ceramic remains include 33 complete or reconstructed vessels and about 150 sherds. The vessels, so far as one may judge from the illustrations and descriptions, are mostly smaller than the usual Renner type, though they resemble some of the better-made pieces from Line Creek. There is apparently more dentate stamping in the Goodall wares, and the flat bases and bell-shaped jars (Quimby, 1941, pl. 15, fig. 1; pl. 16, fig. 2; pl. 17, fig. 1) are unlike Renner. On the other hand, quadrilobate vessels, the cross-hatched and punctate rims, undecorated neck band, alternate area body decoration, rocker-roughening, cord-wrapped stick and dentate stamp impressions on the rim, and pointed base jars with rim bosses (Quimby, pl. 16, fig. 3), occur at Goodall and at Renner. There are too few restorable vessels from Renner to warrant positive assertions, but I am inclined to suspect that many, perhaps most, of the traits listed by Quimby for his types II and III can be duplicated in the sherd series from the Missouri site. Type III of the Goodall focus probably corresponds to the cord-roughened vessel with embossed rim at Renner.

Other items in the Goodall focus that can be paralleled at Renner are heavy stemmed or corner-notched chert projectile points, flint flake knives, small copper celt blades, bone effigies of perforated bear teeth, socketed antler projectile points, stemmed scrapers, and expanded base drill points.

North of the Ohio River, in the Upper Mississippi drainage basin, the Hopewell Culture appears to have reached its zenith in the great geometrical earthworks and well-stocked burial mounds of southern Ohio. These structures, which have commanded the attention and the interest of prehistorians since at least the days of Squier and Davis nearly a century ago, are a far cry from the village sites and comparatively obscure burial tumuli of the Kansas City area. It is unnecessary to review here the complex nature of the burial mounds at the major Hopewell sites or to detail the remarkable finds of mortuary and ceremonial paraphernalia in which stone, bone, copper, mica, pearls, obsidian, and other media were used. Several popular and numerous technical reports have already covered this ground more

or less adequately.¹⁸ The resemblances between certain features of this comparatively advanced complex and the Renner site, however, are worth noting.

In the past ten years several lists of elements considered diagnostic of Ohio or northern Hopewell have appeared (Shetrone and Greenman, 1931, p. 506; McKern, 1931a, p. 235; Greenman, 1938, p. 332; Setzler, 1940, p. 260). All are heavily weighted on the side of ceremonial elements and burial practices, almost none of which can be duplicated at Renner. Instead of relying on these various summary lists, I have used the original published reports on materials from three representative mound groups. These are the Hopewell and Seip sites in Ross County and the Turner group in Hamilton County. It is extremely doubtful that the addition of other site inventories would add materially to the number of similarities with Renner.

Probably the most striking and significant resemblances between the western Missouri and the Ohio materials occur in the pottery complex. It is not easy to visualize the exact nature of the remains from the Ohio sites because, among other lacks, no adequate analysis of Hopewell sherd collections has yet appeared. In the early reports of mound excavation, scant attention was accorded the bits of earthenware encountered throughout the fill or in proximity to the burials; or, where comment was made, they were divided merely into crude or "utility" and artistic or "ceremonial" ware. This division rested apparently on the technologic or artistic quality of the respective types rather than on a demonstrable functional difference. The presence of at least two distinct wares in Hopewell sites in Ohio seems to have been recognized almost from the very beginning of exploration, when Squier and Davis (1848, p. 189) at Mound City recovered vessels decorated in alternate-area style and others which were "heavy and coarse, both in material and workmanship." The latter were thought to be of comparatively modern manufacture, though both types apparently came from the same tumuli.

The "utility" ware as represented by about two-thirds of the sherds from the Turner group (Willoughby and Hooton, 1922, p. 90) is a crude grit-tempered cord-roughened pottery. Vessels are characteristically elongate vertically with decoration, if present at all, found as nodes or punctate elements on the rim below the lip. Fewer details are available for most other sites, but at Seip No. 1 "utility" ware comprised somewhat less than a third of all sherds recovered. Typically these (Shetrone and Greenman, 1931, p. 437) bore a "barklike roughening [cord-roughening ?] which on Algonkian pottery is usually called 'fabric marking.'" For the Hopewell group we have virtually nothing concerning "utility" pottery beyond Moorehead's remark that a cooking pot was of the "ordinary village site type and carries no

¹⁸ See Shetrone, 1930, and references therein; also Setzler, 1940, and references.

significance" (Moorehead, 1922b, p. 165; cf. Shetrone, 1926, p. 203). At Mound City, Mills (1922, p. 331) reported "a variety of pottery ware not differing greatly from the usual rather heavy ware of the lower cultures and serving utility purposes . . . [which] has been found in practically all the mounds of the culture examined . . ."

The "ceremonial" ware is too well known to require detailed description here. Generally speaking, it is a well-made carefully finished hard pottery characterized by use of grit tempering, alternate-area decoration involving plain and rouletted (or rocker-impressed) zones, conventionalized bird motifs, square or "lobed" vessels, flat or tetrapodal bases, and a smoothed neck set off from a cross-hatched or rocker-marked rim by a row of punctates. Of the above features the only ones lacking at Renner are bird motifs and flat or tetrapodal bases. The "ceremonial" vessels from Ohio sites are mostly of small or medium size, which is also true of the better-grade ware at Renner. It should be noted, however, that the highly characteristic cross-hatched Hopewell type of rim occurs at Renner on both very large amphorae and on small jars. Bowls are indicated at Turner (Willoughby and Hooton, 1922, pl. 22, *a*, *c*) but both figured forms have everted lips instead of the incurving walls found on specimens at Renner.

On the basis of our limited sample, the cord-roughened "utility" ware is proportionately much scarcer at Renner than at Turner or Seip No. 1; for other Ohio Hopewell sites there are apparently no published figures on this point. The better-made tastefully ornamented "ceremonial" pottery that has come to be widely regarded as the earmark of the Hopewell horizon is also present at Renner but in somewhat less elaborate form and in relatively limited quantity. Much more common than either is the roughly made ware with large coarsely tempered amphorae of Woodland form with cross-hatched rims and rocker-marked body. This appears to be more or less distinct from anything currently recognized in either Ohio or southern Hopewell sites.

Aside from pottery the Renner site shares with Hopewell, Turner, and Seip No. 1 the following items: Heavy-stemmed or notched chert projectile points, flint flake knives, perforated bone needles, diorite celts, copper celt blades (one small specimen only at Renner), and possibly the use of obsidian. A large three-quarter-grooved ax found by Shetrone (1926, p. 197) in mound 17 of the Hopewell group is regarded by him as atypical and not a part of the Hopewellian complex. The funnel-shaped clay and stone objects at Renner are strikingly similar to two specimens from the Hopewell group. Moorehead (1922b, p. 136 and fig. 30) illustrates a "highly polished hollow object of slate [which] suggests a growing horn." This was taken from altar 2, mound 25, and if shown full size would seem to be nearly

identical in proportions, form, and appearance with the pottery specimen from pit 12 at Renner. Shetrone (1926, p. 272 and fig. 129) describes another made of yellowish crystal quartz which "in form is somewhat funnel shaped, unperforated." This was from offering No. 2 in mound 17. Other than these two pieces from the Hopewell mounds, I have found no record of similar forms from northern Hopewell sites.

From the Turner site came a number of modeled clay figurines, which, except for their better technique and anthropomorphic form, are reminiscent of the pottery birds at Renner. Fragments of what may be crude human effigies have been found at the Trowbridge site in Wyandotte County, Kans. (see above, p. 100), and it is barely possible that further excavations would reveal their presence at Renner.

Imitation bear teeth of bone or antler have been reported from Hopewell, Turner, and Tremper. With burial 278 in mound 25 of the Hopewell group, Moorehead (1922b, p. 157 and fig. 58) found an imitation tooth made of deer antler drilled for suspension and also for a pearl inset. Shetrone (1926, p. 237 and fig. 86) recovered several similar but biperforate pieces from burial 41 in mound 25. The Tremper specimen, of antler, is also described as biperforate (Mills, 1916, p. 227 and fig. 120). Willoughby (1922, p. 55) merely mentions one or two artificial bear canines from Turner.

The large, chipped blades found at Hopewell (Moorehead, 1922b, p. 218) and at Turner (Willoughby and Hooton, 1922), as at other Hopewellian sites, show no particularly close similarity in form or technique to the single large blade from the Renner village site.

Aside from ceramic resemblances the items enumerated above as occurring both in Ohio Hopewell sites and at Renner do not constitute a very impressive group. They include several elements not to be found in any published list of Hopewell determinants. On the other hand, the imitation bear teeth and cone-shaped stone objects, together with flake knives, are so close to forms found predominantly or exclusively at Hopewell sites that some sort of direct relationship or contact is suggested.

Similarities are to be seen between the Renner complex and the recently defined Marksville horizon in Louisiana. These, as in the case of the northern Hopewell materials, concern chiefly pottery traits. Few details on the artifacts are available for the Marksville site itself (Fowke, 1928, pp. 410-434; Setzler, 1933, 1934), but the closely related Crooks burial mound site (Ford and Willey, 1940) presumably carries essentially the same artifact complex.

Of the several pottery wares found at Crooks, only the so-called Marksville Stamped (Ford and Willey, 1940, p. 65) can be considered comparable to any of the materials at Renner. Marksville Stamped,

which conforms in many particulars to the "ceremonial" ware on northern Hopewell sites, includes numerous small pots up to 16 cm. high and bowls with slightly incurving upper walls. Pot shapes are much more varied than at Renner, but many vessels show a general similarity in form. Lobed vessels occur in both areas. Flat bases and tetrapodal supports are found in the Marksville horizon but not at Renner. In regard to decorative treatment, we may note especially the greater variety and complexity in motif at Crooks. Bird designs, common at Crooks, have not been found at the Platte County sites. Among the elements held in common by Crooks and Renner are: Use of cross-hatched rims, commonly channeled on the interior, with a row of punctates along the lower edge; body decoration consisting of alternate smooth and roughened areas separated by wide incised lines; a plain smoothed neck between decorated rim and body areas; use of both notched and smooth rockers and stamps; rocker roughened vessel surfaces, all over or nearly so. Clay tempering, which predominates at Crooks, is rare or absent at Renner.

Most of the Marksville Stamped vessels seem to be much closer to the small or medium jars at Renner, such as are shown on plate 8, *a*. Ford and Willey (1940, p. 65) state that the hardness of Marksville Stamped at Crooks averages 2, and that the ware is soft when wet. At Renner the small jars are much harder and do not crumble easily even after immersion. There is apparently nothing in the Marksville horizon that in size and shape would parallel the large utility jars characteristically associated with the "Marksville period" rim type and with rocker-roughening at Renner.

Brief mention only need be made concerning other resemblances. Ford and Willey (1940, p. 108 and fig. 48f) report a small, conical, unperforated stone object from Crooks somewhat reminiscent of the clay and limestone cones found in pit 12 at Renner. They also describe fragments of baked clay figurines and curved base monitor pipes of pottery. This recalls the pottery bird from Renner; and even more, the clay pipe fragment and broken bust from the Trowbridge site near Renner. The chipped stone industry at Crooks is much less varied than at Renner; common forms include chipped celts, drill points, and heavy stemmed projectile points. Such widespread and probably nondiagnostic items as ground celts, deer ulna awls, and red ochre are further shared.

We have already indicated that in several important respects the pottery complex at Renner apparently tends to parallel that at Ohio Hopewell sites. It approaches still more closely the ceramic tradition at Hopewellian sites in Fulton County, Ill., particularly where specific technologic and artistic details are concerned. Also, the presence of small chipped flint disks, large stemmed projectile points

antler projectile points and cylinders, and snubnose scrapers in the very briefly inventoried Fulton County sites is evidence that the similarities to Renner may eventually extend to aspects of the archeology other than ceramics. On the basis of pottery and a few other resemblances, it looks now as if the search for cultural antecedents of the Renner and related sites will probably lead east or northeast to a horizon much like that represented in the Illinois Valley and perhaps also at Trempealeau.

If we eliminate the items enumerated above as possibly or probably Hopewellian, there remains at Renner a considerable residue whose wider affinities may be briefly considered. Because pre-Hopewellian materials, like Hopewellian village site materials, have not been reported or described in detail for most of the eastern United States, it is exceedingly difficult to judge which of these elements are old and which may be due to a blending in the Missouri Valley of marginal Hopewellian with later Mississippi traits. Planoconvex scrapers, unpaired sandstone sharpening blocks, chipped drill points, hammerstones, hematite pigments, small eyed bone needles, chipped knives, deer-ulna awls or punches, and perhaps turkey-bone awls are widespread types in time and space and in themselves throw little light on the affiliations of the Renner complex. Most or all would be as useful in a primitive hunting-gathering economy as in an advanced horticultural society and could probably be justly regarded as archaic types. The stemmed scraper appears to be an eastern rather than a plains type; it is apparently identical with the "crescentic edged scraper" described by Ritchie (1940a, p. 70, pl. 25, figs. 11, 12, 20-22) from sites of the Laurentian aspect in New York, an old hunting-fishing-gathering economy of the northeast. A large number of similar objects in the national collections from Boone County, Mo., cannot be allocated as to cultural horizon. The grooved ax is classed by Cole and Deuel (1937, p. 210, table 1) as a Woodland determinant, but I am not aware that its actual distribution has been worked out or its antiquity determined.

It has already been indicated that nearly 20 percent of the rim sherds from Renner may be non-Hopewellian in type and suggest Mississippi wares. The vessel shapes associated with these sherds are unknown, as is the specific Mississippi horizon to which they may be referred. It should be noted, however, that certain other artifact types may point in the same direction. The chipped "spud," chisels, celts, and the large elliptical blade from Renner respectively suggest the flare-bitted spades, picks, unnotched hoes, and oval-bitted spades illustrated by Titterton (1938, figs. 18, 22, 20, and 17) from Cahokia. Bone beamers, classed by Deuel as an Upper Mississippi diagnostic (Cole and Deuel, 1937, p. 214, table 2), are extraordinarily

widely spread and occur in slightly variant form over most of North America (Birket-Smith, 1929, p. 357). This distribution would suggest a considerable antiquity, but it is not clear how far into the prehistoric period the use of the beamer extends. Collins (1932, p. 20 and pl. 8, *b, c,*) reports broken specimens from Deasonville, from a period following the Marksville Hopewellian in time. McKern (1930, p. 454) states that "two bone scrapers of the beamer type" were taken from effigy mound 9 of the Kletzien group, Sheboygan County, Wis. The affiliations here are with Woodland, but the temporal relationships to Wisconsin Hopewell are not clear. In New York the beaming tool is common at Iroquois sites; that it is also pre-Iroquoian is indicated by Ritchie's work at Castle Creek (Ritchie, 1934, p. 35) and at Sea Breeze (Ritchie, 1940b, p. 33). The Sea Breeze site, it should be noted, shows several highly characteristic Hopewellian traits. Unpublished data indicate that the metapodial beamer is also a very common type in prehistoric Woodland sites of the Atlantic seaboard. From this it appears that while the beamer may be diagnostic in a sense, i. e., locally, of Upper Mississippi, it also occurs repeatedly in earlier horizons.

Other artifact types whose distribution might profitably be re-examined to determine their antiquity are antler tip projectile points and antler cylinders. Projectile points are common in Fort Ancient and Oneota sites, i. e., in Upper Mississippi horizons, and in the Missouri Valley and Eastern Plains have heretofore been regarded as protohistoric. They occur, however, in widely scattered prehistoric sites in the Missouri Valley, in Hopewellian sites in Fulton County, Ill., at numerous Woodland sites in the Potomac drainage, and in sites of the Laurentian aspect in New York. Collins (1941, p. 146) reports them from the Copell burial site in Vermilion Parish, La., attributed to the Tchefuncte period. Ford and Willey (1941, p. 333) assign the type to the "archaic" stage in the eastern United States. The distribution and antiquity of the antler cylinders or rubbing tools also remains to be worked out in detail. I am not certain whether the "antler drifts" or "tapping tools" ascribed by Ford and Willey to the archaic are identical or analogous forms under a different name.

In previous papers (Wedel, 1938, 1940a) I have referred to the Renner site as Hopewellian, with the further suggestion that in classificatory terms it and nearby unexcavated sites possibly represent "the Kansas City focus of an as yet unnamed westerly aspect" of this phase. Whether such a classification is still tenable, in view of the considerable number of non-Hopewellian elements, may be questioned. Aside from the striking similarity in pottery, there is a bare handful of materials that are distinctively Hopewellian—flake knives, imitation bear teeth, clay and stone cones or "funnels," perhaps clay figurines. On the other hand, it may also be questioned whether the

extant data on the Hopewell horizon adequately characterize all aspects of this important culture. As has been pointed out repeatedly in course of this discussion, investigations on the Hopewell to date have been concerned almost exclusively with the spectacular burial complex to the neglect of the ordinary and commonplace items of every day use. It seems a little strange that after nearly a century of exploration in the upper Mississippi-Ohio drainage area no one has yet presented concrete data as to the subsistence pattern, house types, or village complex of the people responsible for the richly furnished tumuli of the Hopewell horizon. Until these overlong neglected aspects of the problem are adequately illuminated, one must continue to wonder if the wide dissimilarity between Hopewell and Fort Ancient, for example, actually exists, or whether it is due in large part to the fact that an elaborate burial cult has been compared to a village complex whose mortuary practices were much less developed.

With respect to the problem at hand it is impossible to say at the moment in how far the supposedly non-Hopewellian features at Renner are truly foreign to the Hopewell horizon in the Ohio and Illinois Valleys and to what extent they represent merely undiscovered elements whose presence in Hopewell village sites farther east may yet be established by future excavations. Identity between sites as remote from one another geographically as those in Ohio and Missouri is hardly expectable, and the burial complex in the west certainly bears little resemblance to that in Ohio. New contacts and environmental differences undoubtedly resulted in the elimination of old traits and the adoption of new ones by the peripheral groups that settled at the Renner site and elsewhere along the Missouri. It is quite possible that the sites in the vicinity of Kansas City were flourishing later than those in Illinois and Ohio, perhaps at a time when the occupants were, or their predecessors had been, in contact with later groups affiliated with a Middle Mississippi horizon. I suspect that when more extended work is carried out on additional sites in Illinois, Wisconsin, Ohio, and Missouri it will be found that many more similarities obtain than are now apparent. Meanwhile, the Renner complex can perhaps best be regarded as a marginal manifestation, basically of Hopewellian derivation, with an overlay of elements which though they suggest Mississippi influences cannot in all cases be certainly proved to be non-Hopewellian.

THE STEED-KISKER SITE

The Steed-Kisker site, although represented by a comparatively limited amount of material, pretty certainly aligns itself with sites to the east and northeast that have been assigned to the so-called Middle Mississippi phase. Phillips has recently (1940) summarized

the general nature and distribution of this vaguely defined horizon, which centers in the Mississippi Valley between the mouth of the Arkansas and the Missouri but occurs also in varying forms over a vast territory from the Ozark upland eastward to Alabama and Florida, and from Mississippi northward nearly to the Great Lakes. He has further indicated (1940, p. 364) that northward up the Mississippi, Missouri, and Ohio "it fades with progressive attenuation into 'Upper Mississippi' and 'Plains'." As might be expected from the geographic position of the Platte County remains, marginal to the Mississippi Valley, the Steed-Kisker site lacks many of the most conspicuous and arresting features exhibited by Middle Mississippi sites nearer the presumed center of development and dispersion.

There are, for example, no temple mounds or other monumental earthworks at Steed-Kisker, and, if we except the earthen burial mounds some of which may belong to the complex, it appears that such features are absent generally from the Platte County locality. Lacking, too, are the stone hoes, spades, and long blades, the monolithic ax, polished discoidals, palettes, sculptured stone vessels, stone figurines or "idols," engraved marine shells and skillfully carved shell gorgets, copper plates and other objects, and a considerable number of pottery elements. It is possible, of course, that some of these artifact types will come to light when more extensive excavations are undertaken. Meanwhile, about the best that can be done is to compare our brief list from Steed-Kisker with the longer inventories from other Middle Mississippi sites, and to determine how far the Platte County remains are conformable.

The semihorticultural basis of Middle Mississippi society seems to be generally accepted (Cole and Deuel, 1937, p. 20; Phillips, 1940, p. 350), although for the northern centers at least there appears to be very little direct evidence as to the crops grown or the methods followed. Agricultural implements of shell and stone are reported from Cahokia (Moorehead, 1922a, 1928; Titterington, 1938, p. 5), Aztalan (Barrett, 1933, p. 356), Fouts village site in Fulton County, Ill. (Cole and Deuel, 1937, p. 118), and Kingston village site in Peoria County, Ill. (Simpson, 1939). The single perforated mussel-shell hoe at Steed-Kisker is identical with specimens from all these sites. Barrett mentions "a few squash seeds" and notes "an area occupied by 'corn hills'" at Aztalan. At Kingston, Simpson reports a subsistence complex that, except for the absence of domestic sunflowers, must have been substantially like that at Steed-Kisker (see also table 11). Here also were found 49 deer-mandible artifacts identified as hoes, which from the description and rather unclear illustration (Simpson, 1939, p. 10) resemble closely the worked mandible fragment recovered from

pit 4 at Steed-Kisker. Moorehead (1928, pl. 25, fig. 13) figures another example from the Saw Mill mound at Cahokia.¹⁹

Between the house type evidenced at Steed-Kisker and the little known Middle Mississippi dwellings elsewhere there seems to be only a general similarity. Middle Mississippi houses are characterized by Phillips (1940, p. 351) as simple, rectangular, 1-room affairs, lacking specialized entrances or other features, and constructed of bent poles covered with cane, thatch, or clay daub; occasionally interior posts suggest a more substantial structure. At the Fouts site, in Fulton County, Ill., Cole and Deuel (1937, pp. 112-117) found rectangular sunken floors outlined by shallow trenches into which walls of bark, wattlework, or other material are thought to have been set. Fireplaces were usually located near the center of the floor; no evidence was noted of wattle-and-daub roof or walls, or of openings for doors, nor do the ground plans show any systematic arrangement of interior roof supports. At Aztalan, Barrett (1933, p. 88) suspects that the houses, both circular and rectangular in form, were built of wood and plastered with mud. Farther to the south, at the Gordon site in Tennessee, Myer uncovered circular semisubterranean house sites, which he compares with the historic Omaha earthlodge (Myer, 1928, pp. 514-518, 527, 535). The house plans here, however, show no interior supporting posts or any evidence of an entrance passage, two features that occur almost universally in the historic and prehistoric earthlodges of the Great Plains and the Missouri Valley. What little information is available on details of Middle Mississippi house construction suggests that beyond their prevailingly rectangular form and semisubterranean floors there are virtually no specific resemblances to the houses at Steed-Kisker.

The single house unit fully excavated by us at Steed-Kisker, with its four primary interior roof supports, vestibule entrance, straight wall lines with rounded corners, and the pocket cache (?) between hearth and doorway, is essentially identical with the prehistoric earthlodge sites of the Nebraska Culture farther up the Missouri (cf. Strong, 1935, pp. 262-266; Gilmore and Bell, 1936, p. 308; Cooper, 1940). This same basic type, usually subrectangular in outline, occurs widely throughout the prehistoric Great Plains and probably is directly antecedent to the circular earthlodge characteristic of the semi-sedentary tribes of the Missouri Valley in historic times. The genesis of this rather specialized Plains earthlodge is not altogether clear, though it presumably derives from a southeastern prototype (Strong,

¹⁹ The use to which these objects were possibly put is suggested by a "reaping hook" from the Caddo Indians, figured by Rau (1876, p. 95, fig. 235). This consists of "the right lower jaw of an antelope, around which is bent a sapling forming the handle." The jawbone is broken and polished at the diastema; it lacks the worn groove noted on the Steed-Kisker specimen immediately behind the last molar. How the implement was used is not indicated.

1935, p. 296; Wedel 1940a, p. 320). On present evidence, the somewhat simpler Middle Mississippi dwelling type of the north as briefly characterized above does not look like the ancestral form, though this view may need revision when fuller data are available. So far as the native occupants of the Steed-Kisker site are concerned, it appears that they had taken over a definitely western or Plains type of earth-lodge, probably from an already established local semisedentary group affiliated with the Nebraska Culture.

In view of the relative abundance of pottery at Steed-Kisker, at any rate as compared to other materials, it is of interest to note that virtually every ceramic element present here occurs also at Aztalan, Cahokia, Kingston, and in Middle Mississippi sites in Fulton County, Ill. Steed-Kisker presents, generally speaking, a less varied industry, but the following items can be directly compared with the more easterly localities: Decided preponderance of shell tempering, with grit rare or absent; smoothed to polished vessel surfaces, with a small proportion of cord-roughened ware; incised decoration, usually on upper portions of vessels; loop handles, commonly attached by riveting; animal or human effigies affixed to vessel rims; the olla, with hemispheric underbody, rounded or sharp shoulder, constricted neck, low flaring or everted rim, and decorated upper body; a shallow bowl with cylindrical body and flattish bottom; a bean-pot form with solid handle; and possibly a low-necked water bottle type. Whether the "kiva-jar" type, as suspected at Steed-Kisker (see p. 78 and pl. 38, *a*), has counterparts in the Middle Mississippi horizon I am unable to determine.

The incised pottery designs found at Steed-Kisker are also very close to those reported in Fulton County, Ill. (Cole and Deuel, 1937, fig. 12, 4, 5, 26, 27), at Cahokia (Moorehead, 1928, pl. 21, fig. 5), and at Aztalan (Barrett, 1933, figs. 118, 120, 122, 124, and pl. 92, 13, 20, 23). These designs include the use of grouped parallel lines; of undulating single, double, or triple lines, sometimes with cross lines to give a ladder effect; and of parallel lines encircling the rims of bowls or other vessels. The designs, the finished vessels, and indeed the pottery tradition generally are quite easily distinguished from the later Oneota shell-tempered wares of this general locality. They differ almost *in toto* from the pottery which occurs at Renner and related sites nearby.

Other artifact types at Steed-Kisker that probably point to the same Middle Mississippi relationships are: Small triangular notched and unnotched stone arrowpoints, paired sandstone abraders, flake or spall knives,²⁰ end scrapers, cylindrical antler rubbing tools, unpaired

²⁰ These differ from the Renner flake knives in having coarser secondary chipping along the edges, and in being larger and less regularly shaped.

sandstone sharpening blocks, pierced deer phalanges, stone drill points with expanded base, large stone effigy pipes, and such ubiquitous items as hammerstones, pecking stones, and the use of hematite. Few, if any, of the elements just enumerated have specific diagnostic value, and taken by themselves most of them would be quite inconclusive as to the cultural affinities of the site concerned.

As for the burial complex, there is a close parallel between the massed hilltop interments at Steed-Kisker and the somewhat similarly situated Dickson cemetery on Spoon River in Fulton County, Ill. (Cole and Deuel, 1937, p. 120). In each case the dead were interred in close proximity to one another in the extended supine position, with occasional individuals flexed or buried in a bundle. Associated artifacts were much less common at Steed-Kisker, but the straight-sided flat-bottomed bowl with opposing head and tail flanges, the miniature handled and shoulder-incised ollas, as well as the badly weathered fragment of *Busycon columella* and small triangular stone arrowpoints, are all strongly reminiscent of specimen types at the Dickson burial site.

Because no serious attempt has yet been made at a comprehensive and thoroughgoing statistical analysis of Middle Mississippi archeology, and since our trait series from Steed-Kisker is relatively short, the exact relationship of the Platte County materials to the general horizon is at present uncertain. In classificatory terms, the sites with which comparisons have been made above, except for the Gordon site, have been grouped together in the Monks Mound aspect (Cole and Deuel, 1937, p. 218). There can be no doubt, I think, that Steed-Kisker stands in much closer relationship to this aspect than to any of the more southerly manifestations such as Gordon-Fewkes, Etowah, or eastern Arkansas. In respect to pottery types, burial methods, and the general outlines of the known culture inventory, moreover, there are numerous similarities to materials assigned to the Spoon River (Illinois) focus, and, perhaps in lesser degree, to others incompletely described but provisionally designated as the Kingston focus (Cole and Deuel, 1937). There are also close resemblances to artifacts from Cahokia where on the basis of recent archeological investigations, two apparently distinct culture horizons have been recognized (Kelly, 1933, pp. 102-103; Titterington, 1938, p. 15). Neither of these "cultures" has been fully inventoried as yet, and the pottery remains at Steed-Kisker include vessel forms found apparently in both complexes (see Titterington, 1938, fig. 43). I am not prepared to say how closely some of the Platte County sherds resemble the "thin black polished ware" attributed to the Old Village culture, but it should be noted that such other Old Village items as platform mounds, ear spools, pottery trowels, and stone blades have not been recorded for Steed-Kisker.

Photographs of much of the pottery recovered by us at Middle Mississippi sites in Platte County have been submitted to Kelly, whose observations at Powell mound led to recognition of two occupations at Cahokia. In Kelly's opinion (personal communication, February 2, 1942), the Platte County materials are assignable to the later Cahokia horizon originally labeled—from its most distinctive vessel forms—the "Beanpot-duck effigy bowl culture." The pottery of this level is said to be somewhat inferior to that from the earlier "Old Village culture"; associated artifact types have not been defined. Griffin (Griffin et al., 1942, p. 331) states that the Beanpot-duck effigy bowl culture—renamed the Trappist focus—is very closely related to the Spoon River focus of central Illinois.

As matters stand today, it thus appears that Steed-Kisker represents a local variant of late Middle Mississippi culture, which, perhaps partly by reason of its marginal position, lacks many of the characteristic elements and customs found at such large and no doubt longer lived northern centers as Cahokia and Aztalan. Its direct antecedents, we may suppose, are to be sought in or near the Cahokia region by way of the Missouri Valley; and among the presumably contemporary related peoples to the eastward can be included those responsible for the Spoon River and Kingston foci.

In view of its Middle Mississippi affiliations, the Steed-Kisker site bears directly on certain previous archeological findings in the eastern plains area. Gilder (1926, p. 32), Sterns (see Strong, 1935, p. 255), Strong (1935, p. 255 and pl. 14, *c, h*), Hill and Cooper (1937, p. 237 and pl. 5, *i-l*), and Cooper (1940, pl. 6 upper) have repeatedly called attention to the presence in Nebraska Culture sites of small amounts of dark, frequently polished, shell-tempered and incised sherds. These are quite distinct from the usual Nebraska Culture wares; they appear to be most plentiful in sites lying along the Missouri below Omaha but have been reported as far west as the Schrader site in Lancaster County (Hill and Cooper, 1937). Strong (1935, p. 256; see also Hill and Cooper, 1938, p. 351) has noted the similarity of this ware to Cahokia pottery and suggests that its presence in Nebraska Culture sites may be due either to direct trade connections between these early Nebraskans and peoples to the southeast or else to the presence of outposts of the latter peoples in eastern Nebraska. Sterns's discovery of sites near Peru, Nebr., which yielded predominantly these dark incised and shell-tempered sherds, lent support to the second alternative, though limited subsequent excavations in the same and nearby sites suggest that they are still closer to Nebraska Culture than to Middle Mississippi (Hill and Cooper, 1938, p. 323). The Steed-Kisker site, on the other hand, yields pottery of unquestioned Middle Mississippi, not Nebraska Culture, types, and so far as my information goes it is the westernmost

known community, i. e., village and burial site, that can be attributed to the Middle Mississippi horizon. The Missouri Valley was evidently an important route, though not necessarily the only one, by which Middle Mississippi pottery and other elements spread westward to the edge of the Great Plains.

To what extent these and perhaps other westerly representatives of the Middle Mississippi horizon influenced the Nebraska Culture is not now clear. Aside from the distinctive shell-tempered sometimes polished and incised sherds, such Nebraska Culture items as human effigy heads of clay (Strong, 1935, p. 257 and fig. 30), pottery trowels (p. 260 and pl. 17, fig. 1, *b*), effigy clay pipes (p. 160 and pl. 16, fig. 1, *a, b*), grooved and polished deer jaw objects (Gilder, 1909, pl. 4, 2, and 1926, p. 13; Cooper, 1940, pl. 13, fig. 2 upper), and perhaps also mussel-shell hoes (Cooper, 1940, pl. 11, fig. 4 upper) are strongly reminiscent of Middle Mississippi types. Moreover, present indications seem to be that most or all of these items occur in Nebraska only within a short distance west of the Missouri, where Middle Mississippi ceramic influences are most noticeable, and have not been found in contemporary Upper Republican sites in the plains farther west. That the Middle Mississippi peoples received as well as transmitted ideas is indicated by the virtual identity previously noted between the house site at Steed-Kisker and the well-known Nebraska Culture pit-house type. There is no longer any question, therefore, that the Missouri River bluffs zone between Kansas City and Omaha was the habitat at one time (cf. Strong, 1935, p. 256) of "one or more peoples contemporaneous with the Nebraska Culture but apparently somewhat more advanced in ceramic technique." It is evident, too, that considerable intercourse must have taken place between the various groups concerned, though it is not now possible to appraise its extent and all its effects on the participating peoples.

TIME PERSPECTIVE

So far as our explorations are concerned, there is not the slightest indication that the Renner and Steed-Kisker village sites or the earth and chambered stone burial mounds of the Kansas City area were inhabited after the arrival of white men. How long before the European conquest these remains were laid down we have no means of ascertaining. It does not seem likely, however, that any of the material can be attributed to the Siouan tribes, chiefly the Kansa and Osage, who have occupied or claimed the locality and nearby regions since the period of discovery. Neither can we judge at present how long an interval elapsed between abandonment of the sites in question and the coming of the Siouans.

As to the temporal interrelationships of the sites themselves, the local evidence is largely circumstantial. True stratification or super-

position of cultures was nowhere encountered, and there is nothing in the relative degrees of preservation or patination of remains to throw any light on cultural succession.

In the immediately preceding section of this report it was pointed out that the cultural inventory from the Steed-Kisker site parallels in a number of particulars the Nebraska Culture characteristic of the Missouri River bluffs in eastern Nebraska and southwestern Iowa. My own excavations at a Nebraska Culture site near Doniphan, Kans., less than 30 miles northwest of Farley, Mo., netted a small percentage of exotic but inclusive smooth shell-tempered sherds identical in all respects with the ware typical of Steed-Kisker. From this and the evidence adduced above, the general contemporaneity of Nebraska Culture and Middle Mississippi peoples in this section of the Missouri Valley can be accepted. The Nebraska Culture sites, so far as is known today, are everywhere prehistoric and antedate by an interval of unknown length the protohistoric Oneota remains believed to be Siouan. The Nebraska Culture was contemporaneous with the Upper Republican aspect farther west, which is also prehistoric and precedes the protohistoric and historic Pawnee materials of east-central Nebraska.

The Renner site was probably occupied at an earlier period, when the Missouri River bluffs to the north and the plains to the west were the habitat of small widely scattered groups of people with Woodland affiliations. As was pointed out in a previous section, the Woodland occupation of the trans-Missouri region is still very imperfectly known, but preliminary sherd studies and a few limited excavations indicate the existence of several variants. Hill and Kivett (1941, p. 240) have pointed out that the commonest Woodland pottery type in the Nebraska area appears to be a heavy, coarsely gravel-tempered ware, with all-over cord-roughening and perhaps with large pointed-base jars; rims are unthickened, often with punched bosses, and less commonly with cord-wrapped stick impressions. Associated with these sherds are heavy stemmed projectile points. This ware is very close to, if not identical with, a few sherds found at Renner. It is probably significant, therefore, that at the Leahy site in Nemaha County, Nebr., cross-hatched and punctate rims and rocker-roughened body sherds of Renner type were found deeply buried with cord-roughened sherds and embossed rims (Hill and Kivett, 1941, p. 196 and pl. 11). The same association is strongly hinted by excavations at a stratified site on Salt Creek in Lane County, Kans., where rocker-roughened sherds occurred in a Woodland layer along with heavy cord-roughened pottery and stemmed arrowpoints (Wedel, 1940b, p. 86).

As I have stated elsewhere (Wedel, 1938, p. 105), the exact relationship between the small Woodland sites, with cord-roughened pottery found repeatedly throughout the plains, and the Renner

complex is obscure. From the instances cited above, however, it seems safe to infer a general contemporaneity. Moreover, wherever stratification west of the Missouri involves Woodland and other ceramic horizons, the Woodland materials seem always to occur at the bottom of the sequence. This was demonstrated by Sterns (1915; see also Strong, 1935, p. 175 seq.) for the immediate valley of the Missouri, where Woodland remains underlay others attributed to the Nebraska Culture. Recent researches at Ash Hollow Cave in Garden County, Nebr. (Hill and Kivett, 1941, p. 224) and those mentioned above on Salt Creek in Lane County, Kans., show that in widely separated localities in the High Plains the Woodland horizon similarly underlies the Upper Republican. Thus, from the standpoint of temporal succession, if the Renner site is correctly correlated in time with Woodland horizons to the west and northwest, it must also be earlier than the Upper Republican aspect and the Nebraska Culture, with which Steed-Kisker has been equated.

It will be recalled that two pottery vessels of Hopewellian type were taken from a chambered stone burial mound on Pearl Branch. If this and similar structures in Platte County are correctly assigned to the Hopewellian horizon as represented at Renner, there is further support for the succession indicated in the above paragraph. This support derives from our finding of five intrusive shell-tempered vessels of undoubted Middle Mississippi type in the vault and repaired wall of Pearl mound C. The peoples who placed this shell-tempered pottery in the tomb must perforce have been in the district at a time later than the vault builders, provisionally identified as Hopewellian.

Despite the presence at Renner of certain rimsherds and other items possibly suggestive of Mississippi influences, I can see no valid reason for believing that the site on Line Creek was contemporary with Steed-Kisker, or that the respective manifestations of which the two stations are representative were locally in contact with one another. Nothing in the ceramic or other remains at Steed-Kisker, or in any other related village or mound sites so far seen in Platte County, suggests that these people had any commercial intercourse with the Hopewellian occupants of the locality. Had the two groups been contemporary there would certainly be some surviving evidences of the fact. The available data do not warrant a guess as to the age of either horizon, or an attempt at estimating the length of time that intervened between the two occupations.

The greater antiquity of the Renner site, as compared with Steed-Kisker (see table 10), is in line with previous archeological findings and interpretations in the Mississippi Valley. At the Whitnah village site and elsewhere in Fulton County, Illinois, Cole and Deuel (1937, pp. 161, 205) have demonstrated that Hopewellian and Central Basin Woodland peoples preceded Middle Mississippi groups. In

Wisconsin McKern (1939, p. 4) observes that Aztalan (Middle Mississippi) pottery types occur "on or very near the surface stratigraphically above the old Woodland deposits." At one stratified site he reports (McKern, 1933, p. 86) "evidence of an original Hopewell camp probably contemporaneous with and later followed by Lake Michigan [Woodland] culture. The latter was finally contemporaneous with Upper Mississippi culture before disappearing to leave only Upper Mississippi culture." Setzler (1940, table 1) places the Middle Mississippi horizon in Indiana above the Hopewellian; Ford and Willey (1941) consistently do the same in their archeological profiles for the eastern United States.

TABLE 10.—*Chronological correlation of certain sites in Platte County, Mo., with archeological horizons in the central Great Plains*

High Plains	Central Kansas	Loess Plains	Missouri Valley Bluffs Zone (Nebr.; Kans.)	Platte County, Mo.	
Migratory Bison Hunters		Pawnee	Sedentary Siouan	No permanent Indian occupation	Historic (since ca. 1800)
Migratory Bison Hunters and Dismal River Culture	Paint Creek Culture (Wichita ?)	Lower Loup Focus (Pawnee)	Oncota	?	Protohistoric (since ca. 1600)
Upper Republican Culture	?	Upper Republican Culture	Nebraska Culture	Steed-Kisker site and earth burial mounds	Prehistoric (before ca. 1600)
Woodland	?	Woodland	Woodland	Renner site and stone vaults	

GENERAL DISCUSSION AND SPECULATIONS

Apart from the fact that the present study demonstrates the existence in western Missouri of two archeological horizons previously undefined for the Missouri Valley, its chief significance lies in the light thrown on the nature of these two easterly complexes, which are here near the western margin of their known range. Because of this peripheral location it is not likely that the sites will be of crucial importance in unraveling the main developmental processes followed by either the Hopewellian or the Middle Mississippi cultures. At the same time, sketchy as the data still are, they may offer some clues toward partial solution of the still vexing problem of what became of these highly advanced prehistoric groups—or at any rate, of such of their representatives as reached the western fringes of the woodlands and looked out upon the Great Plains.

There is general agreement that the Hopewell and related Hope-

wellian remains throughout the upper Mississippi-Ohio-Great Lakes region for the most part precede those of the various Middle and Upper Mississippi manifestations in the same area. What preceded or led up to Hopewell and Hopewellian and what eventually became of the people responsible for these remains are less clear, but explanatory hypotheses are not lacking (see, for example, Mills, 1917, p. 284; Shetrone, 1920, p. 160; Moorehead, 1922b, pp. 173-178; Setzler, 1933, p. 21 and 1940, p. 263; Ford and Willey, 1940, pp. 137-143, and 1941, pp. 338-344; Quimby, 1941, pp. 144-147; Griffin, 1941a, pp. 211-212, and 1941b). The merits and weaknesses of the several current theories are difficult to assess because much of the evidence on which they presumably rest is fragmentary, unorganized, or has not been set forth with the necessary fullness and exactness. At present, omitting detailed arguments, the likeliest guesses would seem to be (1) that northern Hopewell may owe its beginnings to lower Mississippi Valley influences operating on a somewhat simpler Woodland-like culture in the north; (2) that there were two principal areas of specialization in the north, namely, the Illinois Valley and southern Ohio; (3) that the more dilute forms of Hopewell-like culture in Missouri, Iowa, Wisconsin, Indiana, Michigan, New York, and possibly Oklahoma represent secondary dispersions from the Illinois and Ohio centers. It should be noted that there is as yet no direct proof that the Marksville horizon in Louisiana, thought by some to be an antecedent form, is actually earlier in time than the northern Hopewell sites, nor is it evident just how the postulated southern stimuli were transmitted to the upper valley.

Whatever relationship is eventually established between northern Hopewell and the southern Marksville horizon, the archeological investigations of the past decade have contributed increasingly toward an understanding of the position of these two manifestations in the sequences of aboriginal culture in their respective areas. In Louisiana, Ford and Willey (1940, p. 137) have noted cultural continuity between Marksville remains and those of the earlier Tchefuncte horizon; and also between Marksville pottery types and those of later peoples (1941, p. 345). In Illinois, Cole and Deuel (1937, p. 205) similarly see cultural continuity beginning with the early Black Sand people and running through the Morton focus (Central Basin) into Hopewellian. They further suggest (p. 206) that the Hopewellian groups may have been coexistent briefly with succeeding Middle Mississippi peoples.

The limited data on physical anthropology, wherever it is possible to correlate them with cultural sequences, indicate that in both lower and upper Mississippi areas, the cranial types have undergone parallel changes. Thus, in both regions a long-headed undeformed people are thought to be characteristic of pre-Hopewellian culture

levels as witness the Tchefuncte period skulls from Copell (Collins, 1941) and the Black Sand remains in Illinois (Neumann, in Cole and Deuel, 1937, p. 263). In both areas, to judge from Crooks site (Ford and Willey, 1940, p. 41), Turner (Hooton, 1922), Fulton County, Ill. (Neumann, *op. cit.*), and Trempealeau (McKern, 1931, pp. 237-238a) the Hopewell and Hopewellian period peoples showed a tendency toward brachycephaly and/or occipital deformation, though on the whole dolicocephaly apparently still prevailed. And again throughout both regions, the post-Hopewell Mississippi horizons were characterized by a predominantly broad-headed people who practiced cranial deformation on an extensive scale (Ford and Willey, 1941, p. 334; Neumann, *op. cit.*). In a further contribution to the physical anthropology of the northern Hopewell area, Neumann (1941, pp. 487-488) has called attention to the rather close similarity between crania from the Turner site (primary series) and from Early Woodland sites (Morton and Black Sand foci, Central Basin phase) in Fulton County, Ill., and two later series from Anderson village site at Fort Ancient and from the Maples Mills (Woodland) focus in Illinois. He concludes that all represent the same physical type—a “fairly homogeneous early Sylvid population” once widespread over the eastern United States and probably basic to the Hopewellian peoples. Since the same physical type occurs at Turner and at Anderson village, he suggests that the latter may have been directly descended from the Ohio Hopewell peoples. The Illinois Hopewellians, on the other hand, show a stronger brachycranial element, and Neumann is inclined to believe that their descendants should be sought among the middle Mississippi groups “or among such historic tribes as the Ojibway, where there is a strong Centralid element.” With reference particularly to the pre-Hopewellian and Hopewellian materials from the Illinois Valley, one may question whether Neumann’s series are really adequate to give, or indeed are intended to give, more than a provisional outline of the succession of physical types.

The probable cultural position of the two principal archeological horizons tested by our excavations in Platte County has been indicated in preceding sections of this paper. The Renner village site has definite relationships to certain northern Elemental Hopewellian manifestations, notably to those of the Illinois Valley²¹ and southwestern Wisconsin. It seems quite likely also that the stone-chambered burial mounds of the locality, wherein doliocranic remains have been found, may have predominantly Hopewellian affinities. There is not sufficient skeletal material available to permit us to judge

²¹ Much additional information regarding the Hopewellian occupancy of the Illinois Valley may be found in Baker et al., 1941, and in Griffin, 1941a.

how closely the Platte County Hopewellians resembled those of Illinois, but at present there appears to be no indication of a brachycranial element in the Missouri series and the undeformed males are strongly doliocranic. This suggests that while the Platte County Hopewellian material culture may prove to parallel closely that from the Illinois Valley, it was carried by a physical stock differing in some degree from that in Illinois. We have as yet no proof that there was in Platte County a pre-Hopewellian long-headed group that may have persisted into, and taken over an inventory typical of, a Hopewellian culture period. It would be interesting to know the cultural affiliations of Poynter's (1915, pp. 512-515) Plattsmouth and Fort Lisa, Nebr., crania, and their relationship, if any, to the long-headed peoples who buried in the stone-chambered mounds of Platte County, Mo.²²

The insularity of the Platte County Hopewellian remains, separated by more than 200 miles from the nearest known Hopewellian area to the east, is probably more apparent than real. It is still uncertain whether there was an actual migration of peoples from east to west or, alternatively, a slower diffusion of cultural and perhaps also physical elements. Virtually nothing is on record concerning the archeology of northern Missouri and southern Iowa, but any movement of peoples across this region from the Mississippi and Illinois Valleys would have had to be overland rather than along the major watercourses. If, as I believe, the antecedents of the Platte County Hopewellians are to be sought in or near the Illinois Valley, I would suggest an examination of the possibilities of a cultural or populational dispersion across the Mississippi somewhere in the region between Hannibal, Mo., and Alton, Ill., and a route thence westward up the Salt and/or Missouri River Valleys.

The presence near Kansas City of additional village sites somewhat akin to Renner, but, to judge from surface finds, seemingly with a greater proportion of cruder stamped ware (*supra*, p. 98) reminiscent of Cole and Deuel's type 2, raises other puzzling questions. Are these to be regarded as an earlier developmental stage in a sequence culminating at Renner, as a less advanced contemporary variant, or as a decadent phase? Thorough investigations here might show whether the Hopewellian peoples were migrants as such from the east, or indigenes who acquired Hopewellian culture and took part in a cultural development more or less general throughout the eastern United States. I have no convictions on this score at present, and my information on the sites is too meager to justify further speculation.

There is no hint in our evidence as to the ultimate fate of the

²² Poynter's Plattsmouth crania, including presumably both males and females, are assigned an average length-breadth index of 75.9, a mean height index (see Stewart, *infra*, p. 263) of 89.7. For the male skulls from Copell, Collins (1941, table 1) gives corresponding indices of 75.90 and 89.60. The Copell skulls appear to be slightly larger and somewhat more variable.

people or of the cultural manifestation represented by the Renner site. As I have previously indicated, the archeological inventory includes certain pottery and perhaps other elements suggesting "Mississippi" types. It would be stretching the evidence, I think, to consider this as proof that an attenuated, perhaps decadent, Hopewell culture was here in process of transformation into a Mississippi culture. What may be disclosed along this line by future investigations I cannot foretell, but there is nothing in our material from Steed-Kisker that would suggest a Hopewellian ancestry. Moreover, the physical type of the Platte County (i. e., stone vault) Hopewellians differs sharply from the local Middle Mississippi type as the latter is known from Steed-Kisker. In short, the two occupations were separate and distinct; and proof of somatological or cultural continuity between Hopewellian and Middle Mississippi, if it exists, will presumably have to be sought elsewhere in the region or farther to the east. The Steed-Kisker site, as stated elsewhere, very likely indicates a post-Hopewellian thrust up the Missouri from the readily accessible Cahokia mound region.

As to the relationships between the herein described Platte County materials and other recognized Plains archeological horizons little can be added to what has already been said. Presence of sherds of Hopewellian type in association with cord-roughened Woodland wares in southeastern Nebraska and western Kansas suggests a general contemporaneity over a wide area, but there is no present evidence that either such local Woodland complexes as may have existed or any of the subsequent pottery-making cultures were noticeably affected by the Hopewellians. It must be admitted, however, that little intensive excavation has been devoted to Woodland sites, and virtually none at all to such stations in eastern Kansas where impulses from the Kansas City Hopewellian area ought to be most in evidence. From the standpoint of distribution, it may be significant that despite several decades of reconnaissance and much intensive excavation, no Hopewellian sites have been found in eastern Nebraska, nor indeed have there been any surface finds of material west of the Missouri Valley that even hinted at such a complex. On the other hand, stray sherds and other items reminiscent of the Platte County Hopewellian remains have been reported sporadically from sites in Kansas as far west as Marion County, and, clearly as trade items, even farther to the west. The eastern third of Kansas is a part of the Central Lowland province that extends north and northeast to include most of the Hopewellian area of the upper Mississippi-Ohio-Great Lakes region; environmentally its river valleys would have offered a congenial milieu to any horticultural or semihorticultural group adjusted to the middle or upper Mississippi Basin. It would not be surprising, therefore, to find a continuous distribution of Hopewellian elements,

probably becoming increasingly attenuated, and reaching southward and southwest from Kansas City perhaps as far as northeastern Oklahoma (see Baerreis, 1939). That affiliated village sites will be found much farther west, however, that is beyond the Central Lowland-Great Plains boundary, seems quite unlikely.

The full extent of Middle Mississippi influences in the eastern Plains is not now apparent, but it is already abundantly clear that such influences reached well up the Missouri and its tributaries in southeastern Nebraska. In terms of Plains horizons it was the prehistoric Nebraska Culture that came most closely into contact with peoples of Middle Mississippi affiliation. The cultural similarities have been pointed out previously. Unfortunately, despite the considerable amount of work done to date in Nebraska Culture sites, it has not yet been possible to inject time perspective into this complex. Once the earlier and later phases have been clearly defined the determination of origins and authorship may be greatly simplified. It is my impression, however, that the Nebraska Culture remains may represent a comparatively short-lived occupancy (Wedel, 1940a, p. 313). Provisionally, I am inclined to view this manifestation as due in part to a blending of Middle Mississippi elements with traits derived from an earlier Woodland horizon.

Strong (1935, p. 295) was inclined to attribute the Nebraska Culture to a Siouan movement through the region. Unfortunately, the scant data on historic Siouan archeology throw little light on this question. It is most regrettable, on the one hand, that our skeletal collections from Steed-Kisker include so few measurable remains and, on the other hand, that human bones unquestionably referable to the Nebraska Culture are so very scarce. If the Wallace mound near Bellevue, Nebr., is correctly assigned to the Nebraska Culture (Strong, 1935, p. 208) it is noteworthy that the crania taken therefrom do not support the theory of a Siouan connection. Poynter (1915, pp. 510-512) describes these remains as brachycephalic and occipitally deformed, in which respects they parallel the Steed-Kisker material. But the Wallace mound crania are high-headed in contrast to the distinctly low-headed Siouan type; and Stewart (*infra*, p. 257) has indicated that the single measurable Steed-Kisker skull, despite a fairly low index, is still within the range of non-Siouan high heads. In other words, it appears that both the Nebraska Culture and the Middle Mississippi peoples in this portion of the Missouri Valley have their closest somatological connections in the east and southeast rather than with known historic tribal groups in the Plains. Here again we know so little of the physical type of the various peoples involved that it is impossible to judge whether the Nebraska Culture groups were actual migrants or culturally modified indigenes in the middle Missouri Valley.

Until additional skeletal and archeological materials from the east-

ern Plains border have been made available, it is impossible to judge the degree to which the medium-statured early long heads or the later prehistoric broad heads discussed herein may have contributed to the physical and cultural make-up of the historic Plains farming peoples. By comparison with Hopewellian manifestations farther east, the Renner site does not impress me as the expression of a vigorous expanding civilization but rather as the outpost of a declining one. As previously indicated, it seems quite improbable that its influences on contemporary or later horizons to the west were very striking or sweeping in nature. In considerable measure the same might be said of the Steed-Kisker site and the horizon it represents, though here there was still sufficient vitality to act as a leavening influence on other local populations. I am inclined to view these Platte County materials in much the same way that Strong (1940, p. 386) regards the "mound-building culture" of the Dakota prairies, viz., as the fading traces of formerly advanced groups or cultures pushing successively westward to become simpler horticulturists in the valley of the Missouri. Why these Hopewellian and Middle Mississippi offshoots gave up their spectacular ceremonial and artistic practices as they spread westward I cannot say, though I doubt that the natural environment alone was a serious inhibiting factor. Possibly remoteness from the culture hearths, plus a reduced leisure class and smaller population aggregates, were responsible. Or perhaps, by the time this dispersion into the Missouri Valley took place, the parental culture centers to the east were already past their peak and had begun to disintegrate. Whatever the explanations, we may hope that continued scientific research in and about the Missouri Valley will inevitably shed further light on the interrelationships between the higher prehistoric civilizations of the Mississippi Valley and the more modest sedentary cultures of the eastern Great Plains.

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TABLE 11.—*Summary of data on Renner and Steed-Kisker sites, with comparisons*

Culture traits	Renner	Steed-Kisker	Illinois Hopewell F 664	F 34	Kingston	Cahokia	Trempealeau Lake Michigan	Aztalan	Hopewell	Turner	Serp	Madisonville	Fox Farm	Baum	Nebraska Culture Upper Republican	St. Helena F.	Crooks	Goodall	Valley 1	Illus.
AGRICULTURE AND FOOD-GETTING:																				
Maize.....	-	-	?		-							+	+	+		-				
Beans.....	-	-			-							+	+	+		-				
Pumpkin or squash.....	-	-			-			-												
Domestic sunflower.....	-	-			-															
Mealing slab.....	-	1			9			5					+							
Muller.....	1?	2?											+							
Clamshell hoes.....	-	1	1	4	170	+		117			+	+	+	+		1				Pl. 23, a.
Storage pits.....	36	15	-		+			+	+	+	+	+	+	+	+	+				
Secondarily for re- use.	+	+	-		+			+			+	+	+	+	+	+				
Papaw seeds.....	-	-			-								+							
Wild nuts (hickory, walnut, etc.).	-	-			-							+	+	+						
Deer bones relatively abundant.	+	+	+	+	+			?			+	+	+	+					+	
Turkey bones relative- ly abundant.	-	-			+						+	+	+							
Domestic dog.....	-	-			+								+	?	-				-	
VILLAGE AND HOUSE COM- PLEX:																				
Sites small, compact, unfortified.	+	+	+																+	
Sites large (over 8-10 acres).	-	+	?		+			+					+							
House type.....	-	1	4					+												Pl. 21, b.
Sunken floor ca. 2 feet deep.	-	+	4								+				+	+	+		+	
Subrectangular outline with rounded cor- ners.	-	+	4					+							+	+	+			
Postholes.....	-	-	2																	
A tedge of floor, near pit wall.	-	+	-												+	+	+			
4, in primary series, about hearth.	-	+	-												+	+	+			
Central firepit.....	-	+	3								+		+	+	+	+			+	
Entrance passage, covered.	-	+	-												+	+	+			
Opening to south or nearly so.	-	+	-												+	+	+			
Pocket cache be- tween door and hearth.	-	+	-												-		+			
Earth-covered su- perstructure.	-	+	-												+	+	+			
IMPLEMENTS OF WAR AND HUNTING:																				
Arrowpoints, heavy stemmed or corner notched, of chert.	120+	-	+	?		+		-	+	+	+						130	+	+	Pl. 12, a-i.
Small, triangular, notched.	-	14	-	1	11	-	+	54							-	+	29			Pl. 26, a-d.

TABLE 11.—Summary of data on Renner and Steed-Kisker sites, with comparisons—Continued

Culture traits	Renner	Steed-Kisker	Illinois Hopewell	F ⁶⁶⁴	F ³⁴	Kingston	Cahokia	Trempealeau	Lake Michigan	Aztalan	Hopewell	Turner	Seip	Madisonville	Fox Farm	Baum	Nebraska Culture	Upper Republican	St. Helena F.	Crooks	Goodall	Valley I	Illus.
IMPLEMENTS OF WAR AND HUNTING:—Continued.																							
Arrowpoints—Con.																							
Small, triangular, unnotched.	---	11	25	14	+	+	---	---	295	---	---	---	---	+	+	+	+	29	---	---	---	---	Pl. 26, m.
Of antler, conical, socketed.	9	---	---	---	---	---	---	---	+	---	---	---	---	+	+	+	---	---	---	---	---	---	Pl. 9, a-f.
With basal tang.	6+	---	---	---	---	---	---	---	+	---	---	---	---	+	---	---	---	---	---	---	---	---	Pl. 9, c, d.
Antler tip flakers.	3+	---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	+	+	---	---	---	---	Pl. 10, c.
Ax, ground, ¾ grooved.	4	---	---	---	---	---	---	---	+	1	---	---	---	---	---	---	---	---	---	---	---	---	Pl. 19, a-c.
Crude, notched.	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Pl. 23, c.
Celt, ground, of diorite.	6	---	1	1	+	+	---	---	41	+	---	---	---	+	+	+	---	17	7	+	---	---	Pl. 19, d.
Ground, of hematite.	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Pl. 11, k.
Sandstone abraders, paired.	---	?	2	1	---	---	---	---	---	---	---	---	---	+	?	+	+	+	---	---	---	---	Pl. 30, a, c.
IMPLEMENTS FOR SKIN-DRESSING:																							
Knives, chipped, tri-anguloid.	53?	+	2	---	---	---	---	---	+	+	+	+	+	+	+	---	?	---	---	---	---	---	Pl. 12, l-n.
Ovoid.	---	2	---	---	---	---	---	---	---	---	---	---	---	+	---	+	---	12	+	---	---	---	Do.
Four-edged.	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	+	+	---	---	---	---	---	Do.
Flake.	36	30	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	Pl. 14, a-c.
With retouched edges.	---	+	30	22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Scrapers:																							
Planoconvex, unstemmed.	---	---	4	3	+	+	+	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Pl. 13.
Small to medium.	48	33	+	---	---	---	---	---	---	---	---	---	---	+	---	+	+	+	+	+	+	+	---
Large (over 6 cm. long).	36	---	---	---	---	---	---	---	---	---	---	---	---	+	---	---	---	---	---	---	---	---	---
Stemmed.	7	---	---	---	---	---	---	---	?	---	---	---	---	?	---	---	---	---	---	---	---	---	Pl. 14, l, n.
Antler rubbing tools, cylindrical.	8	1	---	?	---	---	---	---	---	---	---	---	---	---	---	+	+	3	---	---	---	---	Pl. 9, h-j.
Beamers, split metapodial type.	7	---	---	2	---	---	---	---	?	---	---	---	---	+	+	+	---	---	---	---	---	---	Pl. 10, a, b.
Bone scrapers, deer ilium type.	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Pl. 10, p.
Needles:																							
Perforated, of bone, small.	---	?	---	+	---	---	---	---	---	+	+	+	---	+	---	---	---	---	---	---	---	---	---
Perforated, of split rib, large.	1	?	---	---	---	---	---	---	---	---	---	---	---	+	---	---	---	?	---	---	---	---	Pl. 10, e.
Ulna punches and/or awls.	2	2	---	+	---	---	---	---	---	---	---	---	---	+	+	+	---	+	2	---	---	---	Pl. 10, f.
Turkey bone awls.	6	---	---	1	+	---	---	---	---	---	---	---	---	+	+	+	---	---	---	---	---	---	Pl. 10, g-j.
Splinter awls.	12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Bone bodkin.	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Pl. 10, d.
Scapula knife or scraper.	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	+	---	---	---	---	Pl. 25, a.
Sandstone abraders, unpaired ("awl sharpeners").	+	10	+	8	4	+	+	---	+	---	---	---	---	---	+	+	+	+	---	---	+	---	Pl. 19, f, g.

TABLE 11.—Summary of data on Renner and Steed-Kisker sites, with comparisons—Continued

Culture traits	Renner	Steed-Kister	Illinois Hopewell	F ⁶⁶⁴	F ⁹³⁴	Kingston	Cahokia	Trempealeau	Lake Michigan	Aztalan	Hopewell	Turner	Selp	Madisonville	Fox Farm	Baum	Nebraska Culture	Upper Republican	St. Helena F.	Crooks	Goodall	Valley 1	Illus.
MISCELLANEOUS ARTIFACTS:—Continued																							
Stone (chipped):—Con.																							
Large blades (over 20 cm. long).	1	---	---	---	---	---	---	+	---	3	+	+	---	---	---	---	---	---	---	---	---	---	Pl. 16, a.
Bifurcate point, coarsely serrate.	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Pl. 12, o.
Stone (ground):																							
Gouge.....		1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Pl. 28, b.
Cones, hollow, nipped.	2	---	---	---	---	---	---	---	---	---	2	---	---	---	---	---	---	---	---	1.	---	---	Pl. 11, b, c.
Small paint mortar	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Pl. 11, j.
Sandstone ornament, circular, with pierced tab.		1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Pl. 26, n.
Hammerstones.....	8+	3+	5	142	---	---	---	---	---	+	---	---	---	+	+	+	+	+	+	20	---	---	
Pecking stones.....	1	---	---	32	---	---	---	---	---	+	---	---	---	---	---	---	+	+	---	---	---	---	
Hematite and limonite pigments.	9	18	6	---	---	---	---	---	---	+	---	---	---	---	---	---	+	+	+	---	---	---	
Pumice.....	4	5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Obsidian.....	?	---	---	---	---	---	+	---	---	+	+	+	---	---	---	---	---	---	---	---	---	---	
Dakota sandstone.....	21	70+	---	---	---	---	---	---	---	---	---	---	---	---	---	---	+	+	---	---	---	---	
Textile: Twisted cord, 2 ply, of vegetal fibre.		1	---	---	---	---	---	---	---	+	?	---	---	---	---	---	---	---	---	---	---	---	Pl. 20, e.
POTTERY:																							
Tempering:																							
Crushed rock (or sand).	+	+	---	---	---	---	+	+	---	+	+	+	---	---	---	---	+	+	+	+	+	+	
Crushed shell.....	---	+	+	+	+	+	---	---	---	+	---	---	---	+	+	+	---	---	---	---	---	---	
Structure:																							
Granular.....	+	---	---	---	---	---	+	+	---	---	---	---	---	---	---	---	---	+	---	+	---	+	
Flaky.....	---	+	+	+	---	---	---	---	---	---	---	---	---	---	---	---	+	---	+	---	---	---	
Surfaces:																							
Smoothed.....	+	+	+	+	+	+	+	+	+	+	+	---	---	+	---	---	+	---	---	+	+	---	
Polished, imperfectly.	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Slipped.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Cord-roughened, all over or nearly so.	---	---	---	---	---	---	---	+	---	---	+	---	+	+	+	+	+	+	---	---	+	Pl. 3, a.	
Lip:																							
Rounded.....	+	+	31	+	+	---	---	---	---	+	---	---	---	---	---	---	+	---	+	---	+	---	
Flattened.....	+	---	49	+	+	+	---	---	---	---	---	---	---	---	---	---	---	---	+	+	+	+	
Rim profile:																							
Unthickened, vertical or nearly so.	+	---	+	---	---	---	+	---	---	---	+	---	---	---	---	---	+	---	---	---	+	+	Fig. 5, a-c.
Unthickened, interior channelled.	+	---	+	---	---	---	+	---	---	---	+	+	---	---	---	---	---	---	---	---	+	---	Fig. 5, d, e.
Unthickened, recurved or flaring.	---	+	+	+	+	---	---	---	---	+	---	---	---	---	---	---	+	---	+	---	---	---	Fig. 10.

TABLE 11.—*Summary of data on Renner and Steed-Kisker sites, with comparisons—Continued*

Culture traits	Renner	Steed-Kisker	Illinois Hopewell	Fv-664	F-34	Kingston	Cahokia	Trempealeau	Lake Michigan	Aztalan	Hopewell	Turner	Serp	Madisonville	Fox Farm	Baum	Nebraska Culture	Upper Republican	St. Helena F.	Crooks	Goodall	Valley 1	Illus.
POTTERY:—Continued																							
Vessel forms:																							
Elongate vertically, base conoidal or nearly so, constricted neck (amphora).	+	+	+					+	+		+					+						+	Pl. 4, fig. 5, i, j.
Globular, unshouldered, constricted neck.	—															+	+		+		+		Pl. 8, a, d; fig. 5, k, l.
Quadrilobate or "square" vessels.	3+							+			+										+		Pl. 8, b.
Hemispherical underbody, shoulder, constricted neck (olla).		+	+	+	+	+	+			+						+	?	+	?				Fig. 10, h, i.
"Kiva-jar" type		?																					Pl. 38, a.
Dipper or ladle		—								—													
Cylindrical vase		?						+															
Bowls: Effigy head (or head & tail) on rim.		1+		+	+	+				—													Pl. 32, a.
Flattish base, vert. walls (beaker).		+		+	+					—													
Handled "bean pot".		1+				+	+			—													Pl. 39, a.
Shallow, incurving rim.		1+								+					—					—			Pl. 8, c; fig. 5, m.
Miniature forms	3	—	2	—	—	—	+	—	—	—						+	+	+	+		—		Pl. 11, d, f.
Small clay figurines.	1	—	—				—				+						+		6		—		Pl. 11, g.
Funnel-shaped objects, nipped.	1																						Pl. 11, a.
Decorative techniques:																							
Incising	403	+	—	35	7	+	+	—	+	+	+	+	+	+	+	—	—	—	—	—	+		Pl. 23.
Edentate rocker	794	—						+			+	+								—	+		Pl. 3-5, 8.
Dentate stamp	37	+						+			+									+	+		Pl. 7, i, k, m.
Cord-wrapped instrument (other than paddle).	17	+						+	—											—	—		Pl. 6, b, c.
Punching (as on rim bosses).	31	—						+	—		+										—	+	Pl. 3, a.
Areas of decoration:																							
Rim exterior	410	—						+	+		+	+	—				—	+	+	+	+	+	Pls. 3-6, 8.
Body of vessels	+	—						+	+		+	+								+	+	+	Pls. 3, 4, 8.
Plain neck, separated by incised line from decorated body.	+	?						+			+	?	—							—	+		Pls. 3, 4, 8.
Upperbody (above shoulder) only.		+		+	+	+				+							—						Pl. 23.

TABLE 11.—*Summary of data on Renner and Steed-Kisker sites, with comparisons—Continued*

Culture traits	Renner	Steed-Kisker	Illinois Hopewell	F ² -664	F ² -34	Kingston	Cahokia	Trempealeau	Lake Michigan	Aztalan	Hopewell	Turner	Seip	Madisonville	Fox Farm	Baum	Nebraska Culture	Upper Republican	St. Helena F.	Crooks	Goodall	Valley 1	Illus.
POTTERY:—Continued																							
Designs:																							
Cross-hatch and punctate (rim only).	217+	---	---	---	---	---	+	---	---	+	+	---	---	---	---	---	---	---	---	+	+	---	Pls. 3, 5, 8.
Alternating plain and decorated areas, bordering lines.	48+	---	+	---	---	---	+	---	---	+	+	---	---	---	---	---	---	---	---	+	+	---	Pls. 8, a-c.
All-over rocker roughening, on body.	+	---	---	---	---	---	?	---	---	+	+	---	---	---	---	---	---	---	---	---	---	---	Pl. 8, d.
Hachured areas.	---	+	+	---	---	---	---	---	---	+	---	---	---	---	---	---	---	---	+	---	---	---	Pl. 23, a.
Hachured areas, bordered by undulating paired or ladderlike lines	---	+	5	---	---	---	---	---	---	+	---	---	---	---	---	---	---	---	---	---	---	---	Pl. 23, a, c.
Undulating paired or tripled lines above shoulder.	---	---	---	?	---	---	---	---	---	+	---	---	---	---	---	---	---	---	---	---	---	---	Pl. 23, b, d, e.
Added features:																							
Loop handles.	---	27	4	---	+	---	---	---	---	+	---	---	+	+	---	+	---	---	---	---	---	---	Pl. 23, a-c.
Commonly 2 per vessel.	---	+	+	19	---	+	---	---	---	---	---	---	---	---	---	+	---	---	---	---	---	---	
Attachment by riveting.	---	0+	2	---	+	+	---	---	---	---	---	---	---	---	---	+	---	---	---	---	---	---	Pl. 24, h.
Rim flanges or tabs.	---	4	3	+	---	---	---	---	---	+	---	---	---	---	---	---	---	---	---	---	---	---	Pl. 24, e.
Commonly 2 per vessel.	---	+	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Effigy and (or) effigy head lugs.	---	+	---	2	+	+	---	---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	Pl. 24, a-d.
Human head effigy lugs.	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Pl. 24, b.

TABLE 12.—*Provenience and size of specimens illustrated*¹

Plate	Size (cm.)		Material	Provenience	Field No.	U.S.N.M. No.
	Hght.	Diam.				
3, a	24.0+	21.3+	Pottery	Renner site, sq. 135W6, d.20"	110	381158
b	20.0+	23.0	do	Renner site, sq. 55E1, pit 33	222	380952
4, a	43.0	34.0	do	Renner site, from cache in roadcut.		Shippee coll
5, a	24.4		do	Renner site, sq. 55E1, pit 33	222	380941
b	21.0		do	Renner site, from roadcut	214	381160
6, a			do	Renner site, sq. 145W4, d.9-18"	19	380962

¹ Key to abbreviations: sq., square; U.S.N.M., United States National Museum; P. M. H. U., Peabody Museum of Harvard University; d, depth; E, east; W, west; diam., diameter; hght., height; bur., burial; dim., dimension. All dimensions in centimeters; depths in inches.

TABLE 12.—*Provenience and size of specimens illustrated*—Continued

Plate	Size (cm.)		Material	Provenience	Field No.	U.S.N.M. No.
	Hght.	Diam.				
<i>b</i>			Pottery	Renner site, sq. 90E10, d.9-18"	189	381013
<i>c</i>			do	Renner site, sq. 90E5, pit 22	238	380898
<i>d</i>			do	Renner site, surface	1	381143
<i>e</i>			do	Renner site, sq. 95E4, d.9-18"	178	381029
<i>f</i>			do	Renner site		
7, <i>a</i>			do	Renner site, sq. 145W4, d.9-18"	19	380962
<i>b</i>			do	Renner site, sq. 95E12, d.9-18"	264	381103
<i>c</i>			do	Renner site, sq. 140W4, d.18-27"	31	380976
<i>d</i>			do	Renner site, highway cut, pit 19	259	380890
<i>e</i>			do	Renner site, sq. 115, pit 11	120	380861
<i>f</i>			do	Renner site, sq. 90E7, d. ? & pit 19	242, 259	381148
<i>g</i>			do	Renner site, sq. 90E9, pit 17	265	380886
<i>h</i>			do	Renner site, sq. 90E3, d.18-27"		381045
<i>i</i>			do	Renner site, sq. 80E9, pit 36	324	380946
<i>j</i>			do	Renner site, sq. 100E2, pit 26	229	380911
<i>k</i>			do	Renner site, sq. 85E9, d.18-27"	256	381009
<i>l</i>			do	Renner site, sq. 100E3, d.9-18"	257	381120
<i>m</i>			do	Renner site, highway cut, pit 19	259	380890
8, <i>a</i>	16.4	17.3	do	Renner site, sq. 115W1, pit 12	215	380867
<i>b</i>	11.7		do	Renner site, sq. 70, d.17"	100	381080
<i>c</i>	8.8		do	Renner site, sq. 95E3, pit 18	147	380888
<i>d</i>	13.2	13.5	do	Renner site, sq. 115W1, pit 12	216	380866
9, <i>a</i>	16.5	1.9	Antler	Renner site, sq. 90W1, pit 7	289	381171
<i>b</i>	6.8	1.9	do	Renner site, sq. 110E1 & 115E1, pit 29	345	380927
<i>c</i>	7.9	1.5	do	Renner site, sq. 145W2, pit 1	104	380843
<i>d</i>	9.3	1.7	do	Renner site, sq. 80E9, pit 36	324	381166
<i>e</i>	8.8	1.6	do	Renner site, sq. 95E2, d. 14"	277	381051
<i>f</i>	11.0	1.7	do	Renner site, sq. 90, d. 14"	89	381167
<i>g</i>	6.0	2.35	do	Renner site, sq. 90E9, d. ?	282	381173
<i>h</i>	8.1	2.0	do	Renner site, sq. 70, d. 24"	155	381182
<i>i</i>	11.2	2.3	do	Renner site, sq. 95E2, pit 27	312	381183
<i>j</i>	11.3	3.1	do	Renner site, sq. 135W5, d. 24"	154	381181
10, <i>a</i>	16.7	3.2	Bone	Renner site, sq. 100E2, pit 26	208	380914
<i>b</i>	13.4	3.3	do	Renner site, sq. 90E2, d. ?	207	381042
<i>c</i>	13.4	1.9	Antler	Renner site, sq. 145W2, pit 1	30	380842
<i>d</i>	7.6	2.0	Bone	Renner site, sq. 110E1 & 115E1, pit 29	344	380926
<i>e</i>	29.1	1.1	do	Renner site, excavations	?	381193
<i>f</i>	13.3	4.3	do	Renner site, sq. 140, from pipeline fill	33	381192
<i>g</i>	12.9		do	Renner site, sq. 95E12, pit 15	158	381188
<i>h</i>	7.3	1.1	do	Renner site, sq. 95E4, d. 14"	161	381032
<i>i</i>	10.1	2.1	do	Renner site, sq. 115, pit 11	121	380865
<i>j</i>	9.5	2.4	do	Renner site, sq. 100E1, d. 25"	329	381070
<i>k</i>	4.4	.8	do	Renner site, sq. 95W1, d. 13"	356	381189
<i>l</i>	7.6		do	Renner site, sq. 135W4, d. 9-18"	39	380971
<i>m</i>	9.5	2.5	do	Renner site, sq. 95E3, d. 24"	156	381017
<i>n</i>	8.7	2.3	do	Renner site, sq. 95E7, d. 14"	157	381018
<i>o</i>	12.4	2.7	do	Renner site, sq. 100E1, pit 32	327	380937
<i>p</i>	12.6		do	Renner site, sq. 85W8 & 85W9, pit 16	318	381245

TABLE 12.—*Provenience and size of specimens illustrated—Continued*

Plate	Size (cm.)			Material	Provenience	Field No.	U.S.N.M. No.
	Length or max. diam.	Width or min. diam.	Height or thickness				
11, <i>a</i> -----	4.5	3.8	3.4	Pottery----	Renner site, sq. 115W1, pit 12----	169a	380869
<i>b</i> -----	4.2	3.6	3.5	Calcite----	Renner site, sq. 115W1, pit 12----	169b	380870
<i>c</i> -----	6.2(?)	-----	3.0	Limestone----	Renner site, sq. 80E9, pit 36----	210	381256
<i>d</i> -----	3.9	-----	3.1	Pottery----	Renner site, sq. 95E2, pit 27----	217	380919
<i>e</i> -----	4.5	-----	2.4	do-----	Renner site, sq. 145W4, d.18-27"-----	28	380967
<i>f</i> -----	3.9	3.7	-----	do-----	Renner site, sq. 90E10, d.18-27"-----	233	381015
<i>g</i> -----	4.9	2.4	2.1	do-----	Renner site, sq. 95E4 & 95E5, pit 23-----	148	380902
<i>h</i> -----	2.9	1.3	1.0	Bone-----	Renner site, excavations-----	?	381195
<i>i</i> -----	3.4	2.2	0.5	Copper----	Renner site, sq. 85E10, d.12"-----	167	381012
<i>j</i> -----	5.1	4.7	3.3	Limestone----	Renner site, sq. 70E1, pit 31-----	209	380934
<i>k</i> -----	5.7	3.4	1.5	Hematite----	Renner site, sq. 90E11, d.18"-----	166	381257
<i>l</i> -----	3.8	1.4	1.9	Bone-----	Renner site, sq. 140W4, d.14"-----	152	381194

Plate	Size (cm.)		Material	Provenience	Field No.	U.S.N.M. No.
	Length	Width				
12, <i>a</i> -----	8.1	3.4	Chert-----	Renner site, sq. 90E2, pit 25-----	272	381206
<i>b</i> -----	8.0	3.2	do-----	Renner site, east dirt piles during filling-----	347	381211
<i>c</i> -----	7.3	3.4	do-----	Renner site, sq. 100E2, d.9-20 inches-----	285	381207
<i>d</i> -----	6.6	3.4	do-----	Renner site, sq. 100E5, d. 9-18 inches-----	199	381201
<i>e</i> -----	6.6	3.0	do-----	Renner site, sq. 100E7, d. 0-9 inches-----	261	381203
<i>f</i> -----	7.0	2.9	do-----	Renner site, sq. 50E1, d. 9-18 inches-----	330	381210
<i>g</i> -----	6.0	3.15	do-----	Renner site, sq. 95E5, d. 18-27 inches-----	195	381200
<i>h</i> -----	3.4	2.3	do-----	Renner site, sq. 140W3, d.18-27 inches-----	95	381198
<i>i</i> -----	5.3	4.6	do-----	Renner site, sq. 115E1, d.9-18 inches-----	267	381204
<i>j</i> -----	5.5	3.7	do-----	Renner site, surface-----	3	381212
<i>k</i> -----	6.8	2.5	do-----	Renner site, sq. 95E6, pit 21-----	304	381208
<i>l</i> -----	8.1	3.5	do-----	Renner site, sq. 95W1, d.9-13 inches-----	322	381209
<i>m</i> -----	7.7	2.9	do-----	Renner site, sq. 80E1, d.18-27 inches-----	248	381205
<i>n</i> -----	7.3	3.4	do-----	Renner site, sq. 95E12, pit 15-----	198	381202
<i>o</i> -----	8.3	3.3	do-----	Renner site, sq. 135W6, d.17 inches-----	108	381199

TABLE 12.—*Provenience and size of specimens illustrated*—Continued

Plate	Size (cm.)			Material	Provenience	Field No.	U.S.N.M. No.
	Length	Width	Thick-ness				
13, <i>a</i>	10.2	3.7	3.0	Chert.....	Renner site, sq. 100E5, d. 9-18 inches.	199	381223
<i>b</i>	9.6	3.7	2.9	do.....	Renner site, sq. 85E2, pit 24...	263	381224
<i>c</i>	8.3	4.5	3.0	do.....	Renner site, sq. 100E2, pit 26...	229	381225
<i>d</i>	8.2	5.2	3.0	do.....	Renner site 95E6, d. 9-18 inches	235	381226
<i>e</i>	6.8	6.8	2.3	do.....	Renner site, surface.....	3	381227
<i>f</i>	6.1	4.1	2.7	do.....	Renner site, sq. 140W3, d.18-27 inches.	95	381228
<i>g</i>	8.3	5.9	2.5	do.....	Renner site, surface.....	3	381229
<i>h</i>	7.5	10.3	3.2	do.....	Renner site, sq. .95W1, d. 9-18 inches.	322	381230
<i>i</i>	8.1	5.2	2.0	do.....	Renner site, surface.....	3	381231
<i>j</i>	3.2	2.2	1.1	do.....	Renner site, sq. 100E5, d. 9-18 inches.	199	381213
<i>k</i>	4.3	3.0	1.3	do.....	Renner site, from highway cut.	218	381214
<i>l</i>	5.5	3.3	1.7	do.....	Renner site, sq. 140W3, d.18-27 inches.	95	381215
<i>m</i>	6.5	3.2	1.0	do.....	Renner site, sq. 85, d. 9-18 inches.	91	381216
<i>n</i>	7.8	3.5	1.3	do.....	Renner site, sq. 70, d. 18-27 inches.	101	381217
<i>o</i>	6.4	3.5	1.7	do.....	Renner site, sq. 105, d. 9-18 inches.	74	381218
<i>p</i>	5.4	3.8	2.3	do.....	Renner site, sq. 45, d. 9-18 inches.	122	381219
<i>q</i>	6.3	4.7	1.0	do.....	Renner site, sq. 140, d. 15-24 inches.	37	381220
<i>r</i>	5.6	3.2	1.2	do.....	Renner site, sq. 85E2, pit 24...	263	381221
<i>s</i>	7.4	3.5	1.7	do.....	Renner site, sq. 90E8, d. 9-23 inches.	280	381222

Plate	Size (cm.)		Material	Provenience	Field No.	U.S.N.M. No.
	Length	Width				
14, <i>a</i>	3.8	1.4	Chert.....	Renner site, sq. 70, d. 9-18 inches.....	98	381313
<i>b</i>	5.1	1.6	do.....	Renner site, sq. 95E3, d. 9-24 inches.....	355	381314
<i>c</i>	5.0	1.3	do.....	Renner site, sq. 70, d. 9-18 inches.....	98	381313
<i>d</i>	6.5	2.2	do.....	Renner site, sq. 145W2, pit 1.....	29	381316
<i>e</i>	4.8	1.8	do.....	Renner site, sq. 95E12, pit 15.....	198	381315
<i>f</i>	9.4	1.5	do.....	Renner site, sq. ?, d. 11 inches.....	3	381317
<i>g</i>	5.5	1.4	do.....	Renner site, sq. 100E5, d. 9-18 inches.....	199	381318
<i>h</i>	4.5	1.6	do.....	Renner site, sq. 95E3, d. 9-24 inches.....	355	381319
<i>i</i>	5.0	2.8	do.....	Renner site, east dirt piles during back-filling.	347	381320
<i>j</i>	4.7	3.4	do.....	Renner site, sq. 50, d. 9-18 inches.....	41	381321
<i>k</i>	5.0	3.5	do.....	Renner site, sq. 100E5, d. 9-18 inches.....	199	381322
<i>l</i>	2.9	3.3	do.....	Renner site, sq. 130W7, d. 18-27 inches..	123	381323
<i>m</i>	3.1	3.9	do.....	Renner site, sq. 105E1, d. 18-27 inches.....	240	381324
<i>n</i>	4.7	3.4	do.....	Renner site, sq. 110E1 & 115E1, pit 29...	343	381325

TABLE 12.—*Provenience and size of specimens illustrated—Continued*

Plate	Size (cm.)			Material	Provenience	Field No.	U.S.N.M. No.
	Length	Width	Thickness				
15, <i>a</i>	3.7	-----	1.1	Chert.....	Renner site, sq. 115W1, d. 9-18 inches.	86	381249
<i>b</i>	3.6	-----	1.8	do.....	Renner site, highway cut.....	218	381250
<i>c</i>	4.3	-----	1.8	do.....	do.....	218	381250
<i>d</i>	6.0	-----	3.7	do.....	Renner site, sq. 105, d. 9-18 inches.	74	381254
<i>e</i>	6.3	5.4	2.2	do.....	Renner site, 85E4, d. 0-9 inches.	181	381255
16, <i>a</i>	26.7	8.4	1.6	Jasper.....	Renner site, sq. 100E8, d. 13 inches.	146	381243
<i>b</i>	12.2	5.6	1.4	Chert.....	Renner site, sq. 85E2, pit 24.	171	380907
<i>c</i>	12.3	6.2	1.9	do.....	Renner site, sq. 90E5, pit 22.	298	381244
17, <i>a</i>	14.2	4.1	2.2	do.....	Renner site, sq. 115W1, pit 12.	141	380876
<i>b</i>	10.7	3.0	1.5	do.....	Renner site, sq. 115, d. 8-18 inches.	38	381246
<i>c</i>	11.5	3.2	2.8	do.....	Renner site, sq. 40, d. 9-18 inches.	137	381247
<i>d</i>	5.5	1.9	1.7	do.....	Renner site, sq. 100E11, d. 9-18 inches.	187	381248
<i>e</i>	12.4	6.0	1.2	do.....	Renner site, sq. 70, d. 25 inches.	55	381245
18, <i>a</i>	6.5	4.5	1.7	do.....	Renner site, sq. 90E9, d. ?	281	381233
<i>b</i>	5.5	3.9	1.3	do.....	Renner site, sq. 85E2, d. ?	180	381236
<i>c</i>	5.0	2.9	1.5	do.....	Renner site, highway cut.....	218	381237
<i>d</i>	5.0	3.3	1.2	do.....	Renner site, sq. 85E1, d. 18-27 inches.	262	381238
<i>e</i>	5.9	3.8	1.2	do.....	Renner site, highway cut.....	218	381239
<i>f</i>	7.7	4.2	1.0	do.....	Renner site, sq. 110, d. 9-18 inches.	36	381240
<i>g</i>	7.0	4.1	1.2	do.....	Renner site, sq. 145 and 145W1, d. 0-9 inches.	5	381241
<i>h</i>	6.4	2.9	1.0	do.....	Renner site, sq. 95E1, d. 9-18 inches.	232	381242
19, <i>a</i>	18.5	10.5	6.7	Diorite.....	Renner site, highway cut.....	168	381258
<i>b</i>	9.0	5.6	4.0	do.....	do.....	219	381259
<i>c</i>	9.7	5.1	3.4	do.....	Renner site, sq. 70E1, d. 20 inches.	230	381061
<i>d</i>	11.4	7.7	4.2	do.....	Renner site, sq. 115, d. 20 inches.	87	380991
<i>e</i>	7.5	-----	7.1	Quartzite.....	Renner site, highway cut.....	213	381260
<i>f</i>	6.3	4.6	4.0	Sandstone.....	Renner site, sq. 85E11, d. 9-18 inches.	201	381280
<i>g</i>	5.6	5.2	3.3	do.....	Renner site, east dirt piles in backfill.	347	381281

Plate	Size (cm.)		Material	Provenience	Field No.	U.S.N.M. No.	
	Length	Width (or hght.)					
20, <i>a</i> -----	11.0	1.2	Argillaceous sandstone.	Clay County, Mo-----	(Shippee Coll.)		
<i>b</i> -----	6.5	3.7	do-----	do-----	Do.		
<i>c</i> -----	4.0	1.0	do-----	do-----	Do.		
<i>d</i> -----	3.5	2.4	Antler-----	Wyandotte County, Kans-----	(Trowbridge Coll.)		
<i>e</i> -----	-----	-----	Cordage-----	Steed-Kisker site, pit 2-----	37	381434	
<i>f</i> -----	16.6	-----	Bone-----	Steed-Kisker site, pit 4-----	80	381447	

TABLE 12.—*Provenience and size of specimens illustrated*—Continued

Plate	Size (cm.)		Material	Provenience	Field No.	U.S.N.M. No.
	Diam.	Hght.				
22, a	15.3	7.8	Pottery-----	Steed-Kisker Site, house 1-----	179	381408
b	12.7	8.5	do-----	do-----	164	381407
c	16.3	12.2	do-----	Steed-Kisker site, pit 5A-----	35	381453
d	-----	-----	do-----	Steed-Kisker site, pit 3-----	42	381441
e	-----	-----	do-----	Steed-Kisker site, pit 8-----	65	381459

Plate	Material	Provenience	Field No.	U.S.N.M. No.
23, a----	Pottery--	Steed-Kisker site, house 1-----	169	381397
b-----	do-----	Steed-Kisker site, midden 1, sq. E15-----	101	381482
c-----	do-----	Steed-Kisker site, house 1-----	178	381397
d-----	do-----	do-----	190	381397
e-----	do-----	Steed-Kisker site, midden 1, pit 2 (pit 11)-----	6	381471
24, a----	do-----	Steed-Kisker site, house 1-----	205	381401
b-----	do-----	do-----	(Shippee Coll. No. 1883)	
c-----	do-----	Steed-Kisker site, pit 1-----	22	381427
d-----	do-----	Steed-Kisker site, surface-----	52	-----
e-----	do-----	do-----	53	381512
f-----	do-----	Steed-Kisker site, house 1-----	169	381397
g-----	do-----	do-----	178	381397
h-----	do-----	do-----	164	381397
i-----	do-----	Steed-Kisker site, pit 11-----	1	381471

Plate	Size (cm.)		Material	Provenience	Field No.	U.S.N.M. No.
	Length	Width or diameter				
25, a	17.5	4.8	Bone-----	Steed-Kisker site, pit 13, d.32"-----	79	381477
b	11.5	3.8	do-----	Steed-Kisker site, pit 1-----	8	381432
c	7.5	3.1	do-----	Steed-Kisker site, pit 13, d.42"-----	77	381476
d	3.6	1.5	do-----	Steed-Kisker site, midden 1, sq. D15-----	70	381508
e	5.6	1.6	Corncob-----	Steed-Kisker site, pit 2-----	-----	381433
f	11.5	2.9	Antler-----	Steed-Kisker site, pit 1-----	7	381431
g	10.6	2.2	do-----	Steed-Kisker site-----	(Shippee Coll. No. 1882)	

TABLE 12.—*Provenience and size of specimens illustrated*—Continued

Plate	Size (cm.)		Material	Provenience	Field No.	U.S.N.M. No.
	Length	Width				
26, a	3.1	1.6	Chert	Steed-Kisker site, midden 1, sq. C15.	113	381494
b	2.5	1.3	do	Steed-Kisker site, house 1 entrance.	202	381409
c	1.9	1.2	do	Steed-Kisker site, surface	55	381514
d	2.7	1.3	do	do	55	381514
e	1.6	1.3	do	Steed-Kisker site, pit 8.	89	381460
f	2.7	1.1	do	Steed-Kisker site, midden 1, sq. F O.	136	381495
g	6.3	2.3	do	Steed-Kisker site, surface	58	381515
h	3.6	1.5	do	do	55	381515
i	4.2	2.1	do	Steed-Kisker site, midden 1, sq. F5.	28	381496
j	4.3	2.0	do	Steed-Kisker site, house 1	196	381409
k	2.2	1.6	do	Steed-Kisker site, house 1 entrance.	202	381422
l	4.1	2.8	do	Steed-Kisker site, midden 1, sq. G5.	118	381499
m	2.7	1.6	do	Steed-Kisker site, pit 8.	89	381460
n	5.8	5.4	Sandstone	Steed-Kisker site, house 1	268	381414
o	3.5	2.5	Chert	Steed-Kisker site, midden 1, sq. F5.	110	381498
p	5.0	1.8	do	Steed-Kisker site, midden 1, sq. C20.	143	381500
27, a	3.9	2.0	do	Steed-Kisker site, house 1	195	381410
b	3.2	2.0	do	do	172	381410
c	5.2	2.1	do	do	195	381410
d	6.1	2.6	do	Steed-Kisker site, pit 5.	32	381451
e	5.8	2.3	do	Steed-Kisker site, pit 1.	16	381428
f	6.5	3.0	do	Steed-Kisker site, house 1	182	381412
g	7.7	3.0	do	Steed-Kisker site, pit 4.	82	381448
h	7.6	3.0	do	Steed-Kisker site, pit 3.	43	381443
i	6.6	3.1	do	Steed-Kisker site, house 1	166	381410
28, a	13.5	10.1	Shell	Steed-Kisker site, pit 3.	45	381444
b	13.4	3.0	Diorite	Steed-Kisker site, house 2	252	381425
c	8.7	8.3	Diabase	Steed-Kisker site, surface	61	381517
d	6.7	6.1	Quartzite	Steed-Kisker site, pit 8.	95	381465

Plate	Size (cm.)			Material	Provenience	Field No.	U.S.N.M. No.
	Length	Width	Hght.				
29	11.2	6.7	8.2	Limestone	Steed-Kisker site, midden 1, d.15 inches.	70	381502

TABLE 12.—*Provenience and size of specimens illustrated*—Continued

Plate	Size (cm.)		Material	Provenience	Field No.	U.S.N.M. No.
	Length (or hght.)	Width (or diam.)				
30, <i>a</i> -----	6.3	2.9	Sandstone-----	Steed-Kisker site, house 1-----	161	381418
<i>b</i> -----	6.4	5.7	do-----	do-----	154	381418
<i>c</i> -----	5.1	3.6	do-----	do-----	170	381418
<i>d</i> -----	9.0	8.0	do-----	do-----	247	381415
32, <i>a</i> -----	11.1	15.2	Pottery-----	Steed-Kisker site, bur. ground, near bur. 12.	199	381521
<i>b</i> -----	9.2	11.7	do-----	Steed-Kisker site, bur. ground, sq. 80E2.	219	381522
<i>c</i> -----	5.6	10.1	do-----	Steed-Kisker site, bur. ground, near bur. 66.	258	381523
<i>d</i> -----			do-----	Steed-Kisker site, bur. ground, sq. 60E1.	223	381544
<i>e</i> -----	4.7	4.0	do-----	Steed-Kisker site, bur. ground, sq. 65W4.	222	381550
<i>f</i> -----			do-----	Steed-Kisker site, bur. ground, bur. 1.		381524
<i>g</i> -----			do-----	Steed-Kisker site, bur. ground, sq. 55.	208	381528
<i>h</i> -----			do-----	Steed-Kisker site, bur. ground, bur. 51.	233	381533
<i>i</i> -----			Chert-----	Steed-Kisker site, bur. ground, bur. 1.	226	381525
<i>j</i> -----	6.0	2.1	do-----	do-----	221	381549

Plate	Size (cm.)		Material	Provenience	Field No.	U.S.N.M. No.
	Max. diam.	Min. diam.				
35, <i>c</i> -----	4.8	4.5	Quartzite-----	Pearl mound C, from bur. chamber.		381386
<i>d</i> -----	5.4	5.0	do-----	do-----		381386
<i>e</i> -----	10.5	2.4	Antler-----	do-----		381384

TABLE 12.—*Provenience and size of specimens illustrated*—Continued

Plate	Size (cm.)		Material	Provenience	Field No.	U.S.N.M. No.
	Diam. (width)	Hght. (length)				
36, a	4.8	5.2	Pottery	Nolan mound C, from bur. enclosure.	237	381387
b	15.0	9.2	do	do	236	381392
c	14.5	11.1	do	do	242	381391
d	14.6	14.0	do	do	241	381390
e	14.9	12.4	do	do	235	381389
f	11.1	9.6	do	do	234	381388
37, a	15.0	12.7	do	Babcock mound A, from bur. pit.	243	381393
b	11.5	12.0	do	Babcock mound B, from bur. enclosure.	(A. H. Hansen Coll.)	
c	13.8	13.3	do	do	Do.	
38, a	18.3	14.6	do	Pearl Branch sherd area A	(Shippee Coll.)	
39, a	16.0	12.3	do	Shepherd earth mound		381551
b	16.3	12.5	do	do		381552
c	18.3	11.7	do	do		381554
d	15.6	9.8	do	do		381553
40, a	11.6	6.6	Pottery	do		381556
b	14.9	9.2	do	do		381555
c	15.0	12.8	do	do		381557
d	5.9	5.1	Limestone	do		381559
e	3.5	10.2	Chert	do		381561
f	5.1	13.7	do	do		381560

Plate	Size (cm.)		Material	Provenience	Catalog No.	Collector or museum
	Diam. (width)	Hght. (length)				
41, a	12.0	8.8	Pottery	Renner mound		Shippee
b	6.3	20.0	Diorite	Ridge west of Renner site, surface		
c	8.7	26.2	Chert	Renner mound	1300	Do.
42, a	13.8	9.5	Pottery	South mound, Avondale, Mo.	1345	Do.
b	14.5	10.3	do	do	1344	Do.
c	12.2	18.7	do	do	1343	Do.
d	13.8	10.0	do	do	1347	Do.
e	11.5	7.3	do	do	1346	Do.
43, a			Chert	Eastern part of Keller's farm, Clay County, Mo.	19615	P. M. H. U.
b			do	Wolfden Ridge, Platte County, Mo.	19640	Do.
c			do	do	19637	Do.
d			do	do	19635	Do.
e			do	do	19638	Do.
f			do	do	19639	Do.
g			do	do	19635	Do.
h			do	do	19656	Do.
i			do	do	19665	Do.
j			do	do	19645	Do.
k	6.7	6.4	Red slate	do	19643	Do.
l			Hematite	do	19644	Do.
m			Chert	do	19642	Do.
n			do	do	19642	Do.
o			do	do	19642	Do.
p			do	do	19642	Do.
q	5.8	26.0	do	do	19641	Do.
r			do	do	19642	Do.

TABLE 12.—*Provenience and size of specimens illustrated*—Continued

Plate	Size (cm.) (approx.)		Material	Provenience	Field No.	Collector	Museum
	Diam.	Hght.					
44, <i>a</i>	11.5	9.3	Pottery...	Dawson mound 9, Boone Co., Mo.	34	Fowke..	Missouri Hist. Soc.
<i>b</i>	13.3	12.0	...do.....	do.....	35	...do....	Do.
<i>c</i>	11.5	12.0	...do.....	Dawson mound 11, upper vault.	49	...do....	Do.
<i>d</i>	10.8	10.8	...do.....	Dawson mound 11, bottom of lower vault.	53	...do....	Do.
<i>e</i>	9.8	8.8	...do.....	Dawson mound 13.....	44	...do....	Do.
<i>f</i>	10.8	10.2	...do.....	do.....	45	...do....	Do.

APPENDIX

SKELETAL REMAINS FROM PLATTE AND CLAY COUNTIES, MISSOURI

By T. D. STEWART

THE skeletal remains assembled by Dr. Wedel from about Kansas City, Mo., comprise two distinct lots, culturally speaking. One of these came from so-called stone-vault mounds and is presumptively attributed to the Hopewellian culture; the other group of skeletons came from a cemetery in association with Middle Mississippi cultural objects. From the fact that Middle Mississippi potsherds were found intrusive in a stone vault (Pearl mound C), it is concluded that the Hopewellians were the earlier of the two groups. However, the attribution of the skeletons from the stone vaults to the Hopewellian cultural period is based upon rather slender evidence, and this point will be emphasized here through a summary of Dr. Wedel's account of the circumstances surrounding their recovery (cf. p. 188 herein).

During the summer of 1937 Dr. Wedel investigated an archeological site on Line Creek about 5 miles northwest of Kansas City, Mo. This work resulted in establishing the fact that the culture at this village site, now known as the Renner site, was predominantly Hopewellian in type, with a lesser representation of Woodland elements (Wedel, 1938). Unfortunately, no skeletal remains were recovered here. However, up to that time the Hopewellian culture had not been reported this far west.

During the winter of 1937-38 Dr. Wedel secured for examination from A. H. Hansen, of Kansas City, Mo., some nearly complete pots that the latter had removed from a small mound (Babcock mound B) near that city, and about 12 miles from the Renner site. This pottery proved to be Hopewellian.

Learning that Hansen had found these pots in association with skeletal material in a stone chamber within the mound, Wedel succeeded in having this material likewise submitted for examination. Unfortunately, very little skeletal material was recovered by Hansen; it consisted chiefly of portions of five skulls, two (Nos. 1 and 2) with

nearly complete vaults, but no faces or other parts, and three (Nos. 3, 4, and 5) represented only by frontal bones. The more complete specimens showed medium occipital compression, and one of these (No. 1) was so high headed as to appear abnormal (possibly premature occlusion of the coronal suture). However, the striking thing about at least three of the specimens was the narrowness of the frontal bones and the prominence of the anterior sagittal crest. Also, all the specimens showed marks of rodent teeth, thus bearing witness of their residence in a vault.

After seeing these cranial fragments, Wedel called my attention to the fact that Fowke had investigated mounds near Kansas City in 1907 (Fowke, 1910). In one of these mounds (Brenner No. 2), situated on the bluff above the Renner village site, Fowke had found a portion of a skull that previous excavators had discarded and hence was without direct cultural association.¹ In an appendix to the Fowke report is a description by Hrdlička of the skull fragment (No. 131) from this mound, as follows:

An adult male skull, very dolichocephalic, partially deformed. There is a slight flattening on the frontal bone above the middle, on each side of the median line, seemingly produced by the pressure of two small pads, and there is also a quite marked occipital compression. The forehead is low, though showing distinct convexity. The supra-orbital ridges are prominent and the supra-orbital border distal from them is protruding.

Along the border, just mentioned, of the orbits are marks made by rodent's teeth and also marks resembling knife cuts; and in the lower part of the right parietal, about the middle, there is a semi-circular area bearing lines resembling cuts and also traces of rodent's teeth; this is 3 cm. in diameter [p. 109].

The consistent finding of occipital compression, together with an unusually narrow frontal bone, in association with elements of the Hopewellian culture complex furnished the stimulus to locate more skeletal remains from these mounds. Accordingly, at Dr. Wedel's request, J. M. Shippee, of North Kansas City, reinvestigated the mound where Hansen found the pottery (Babcock mound B), securing besides valuable archeological information, one nearly whole skull and numerous fragments of skulls and long bones. This material fitted in with the preceding finds.

Since Shippee reported the presence of numerous mounds in the vicinity where Hansen had worked, Wedel spent part of the summer of 1938 examining nine of these (Wedel, 1939). In three (Pearl mound C, Nolan mound A, Young mound 1) he found skeletal remains worth saving (U. S. N. M. Nos. 379099-118), but with no more direct cultural association than heretofore. The other vaults yielded only broken or calcined fragments of bone. In most cases the skeletons appeared to have been disarticulated at the time of burial and in

¹ The Klammm mound, also near Kansas City, yielded some bones, but they are too fragmentary to be significant.

some instances had been burned. The only articulated skeleton encountered (No. 379116, Nolan mound A) was extended face down, but burned in the pelvic region.

The collection from the stone vaults thus consists of findings by four individuals: Fowke, Hansen, Shippee, and Wedel. Hansen alone found Hopewellian pottery in the same vaults with skulls. However, all the skeletal material comes from similar stone vaults not over 12 miles apart and near an identified Hopewellian village site. In nearly all cases, too, the bones seem to have been disarticulated at the time of burial and in some instances exposed to fire. These and other recognizable elements of the Hopewellian burial complex form the basis for attributing the skeletal remains to this culture. In examining this material I have attempted primarily to weigh the attribution by making comparisons with other known Hopewellian groups.

As already indicated, the Middle Mississippi skeletal remains were recovered by Dr. Wedel from a cemetery (Steed-Kisker site) situated only about 3 miles distant from the Pearl Branch mounds mentioned above (Wedel, 1939). Unfortunately, the state of preservation of this material was very poor and little could be saved. However, since the cultural association here is quite definite and the physical type is different from that of the Hopewellians, this small sample makes it possible to rule out intrusive burials of the Middle Mississippi people into the Hopewellian mounds.

METHODS

Most of the skulls being fragmentary, I will not describe them separately in full detail but will give whatever individual standard measurements are possible. In taking the measurements I have followed Hrdlička's method (Hrdlička, 1939). However, orbital breadth is taken from lacrimale instead of from dacryon.

In order to demonstrate the pronounced transverse curvature of the frontal bone that is present in many of the mound skulls, I have resorted to both graphic and mensural methods. With the aid of the Schwartz stereograph each frontal bone was oriented so that bregma was vertically above nasion; then the transverse profile was drawn at a level midway between these two landmarks. Comparable orientation was obtained by keeping the minimum frontage diameters parallel. The resulting curves are described in terms of their nearest true-curve fits. In fitting these curves I have used Graves' "arcometer" (Graves, 1930), reading only to the half-centimeter.

The mensural method is based on the seeming fact that increased curvature of the frontal is accompanied by a decreased minimum frontal diameter. This fact then can be demonstrated indicially on the basis of the frontal chord $\left(\frac{\text{Min. fr. diam.} \times 100}{\text{Frontal chord}} \right)$. This relationship is known as the frontal index.

Since basion is missing so often in this collection, I have given the porion-bregmatic height where these landmarks are preserved. It has been possible to use the Schwartz stereograph to project porion and bregma into the same plane for measurement.

SKULLS

MOUND SERIES (HOPEWELLIAN)

Condition of specimens.—The 22 specimens of this series that are of use in this study are listed in table 14. Here it will be seen that the majority come from three mounds: Babcock B, Pearl C, and Young 1. The skulls for the most part are incomplete, being represented often by merely the frontal bone or skull cap; only eight are relatively complete. Three that had been exposed to fire could be restored sufficiently for study, but many such fragments have been discarded. Incidentally, no burned bones seem to have been recovered from Babcock mound B.

In half the specimens rodent tooth marks are quite evident at such places as the orbital margins and zygomatic processes.² Occasionally, broken edges of the skulls show similar tooth marks. With the exception of one lower jaw, the burned bones are free from this type of destruction. Since, as a rule, rodent marks are seen only on bones from caves and like open burial chambers, I have assumed that in the present case these animals had access to the bones before the stone vaults collapsed and not afterwards. If we assume furthermore that the rodents were attracted to the bones only when the latter were relatively fresh and contained organic matter, which seems reasonable, then the gnawed broken edges may mean that some of the skulls were broken at the time of burial. This in turn would be consistent with the disarticulated state of the skeletons and the signs of burning.

Pathology.—Three skulls exhibit major pathological changes, aside from those associated with the teeth: (1) The skull known as "Shippee C" is roughly scarred about the glabellar and nasal regions (see pl. 45); (2) the upper jaw of skull 379100 shows a lesion of the palate that has apparently reached the stage of perfection; (3) skull No. 379109 has three old depressed scars near the midfrontal region, other similar scars, partly confluent, about each parietal bone, and a recent periostitis on the right malar (see pl. 46). In view of findings on the long bones to be mentioned later, it is not impossible that in all cases these lesions may be attributable to syphilis.

² In the statement by Hrdlička quoted on p. 246 he uses the expression "marks resembling knife cuts." Again in an earlier publication (1907, pp. 90-91) he makes quite a point of these "cuts made by some sharp implement wielded by human hands." I am unable to distinguish between marks made by a knife and by rodents' teeth and prefer to attribute all of them to the latter source.

Sex.—The collection consists of 12 males (4 with sex questioned), 9 females (one with sex questioned), and 1 child.

Suture closure.—Table 14 also gives the status of suture closure for the individual specimens, and this will serve as an indication of age. Of the adults, only four are young, as judged from the open sutures; at least four others may be in the stage of beginning suture closure; and the remainder show the extensive obliteration of the sutures characteristic of old age. In one case (Hansen 1) an unusual height of the vault (porion-bregma height 12.9 cm.) suggests an abnormality perhaps associated with premature suture closure.

Teeth.—Eight skulls have teeth preserved. The youngest of these (No. 379101) has its M³'s unerupted and shows only slight wear of M². This, of course, agrees with the patent sutures. No. 379102 appears to be a little older; its M³'s are erupted and the M²'s show somewhat more wear. Two skulls in the stage of beginning suture closure (Nos. 379109, 379116) show moderate tooth wear; three others in a somewhat more advanced stage of suture closure (Nos. 379100, 379111) show extreme wear together with tooth loss. And finally, two skulls with extensive suture closure (Shippee C, No. 379113) likewise show extreme wear and loss. It is my impression that tooth wear in this group starts early and progresses rapidly. However, it is noteworthy that tooth loss is disproportionate to the wear; loss occurs finally through exposure of the pulp cavity and consequent abscess formation. In two cases (Nos. 379100, 379116) abscesses have made openings into the antra.

Hooton (1922, p. 118) remarks in connection with the Turner site (Ohio Hopewellian) that "on the whole, this series includes a high percentage of crania with deeply worn teeth (43.3 percent)". According to his table on page 119 he found pronounced wear appearing in middle age (36-50 years). Also only 8 out of 29 individuals have lost teeth in life and "caries and alveolar abscesses are not especially prevalent."

Anomalies.—In 49 temporal bones (26 right, 23 left) no ear exostoses were observed. Although the tympanic plate was not intact in all cases, perforation was observed in only eight cases (4 right, 4 left).

Hooton does not mention ear exostoses in connection with the Turner series, so presumably none was observed. He reports that perforations of the tympanic plate were seen in only 4 of 24 individuals (p. 121).

Deformation.—In the second column of table 13 the presence or absence of deformity is noted. In seven of the skulls (3 male, 4 female) the occiput is definitely flattened in a vertical plane and without much if any asymmetry. It is difficult to judge the grade of flattening because we are dealing with skulls that were originally quite long-headed and that in spite of being deformed still give in

some cases a low cranial index. Nevertheless, I am inclined to look upon the deformity as being slight to medium instead of pronounced.

Hooton does not describe or picture the deformity of the Turner series other than by saying that it is a slight grade of occipital flattening affecting 8 out of 43 specimens (one other was of medium grade).

Speaking of remains from Hopewellian sites in Wisconsin, McKern (1931, p. 214) states that "not a few of the skulls showed marked artificial deformation of the occiput, probably due to prolonged contact with a hard cradle board during infancy."

In a preliminary discussion of this material (Stewart, 1940a) I suggested that the extreme narrowness of the frontal bone (minimum frontal diameter 9.2 cm. in 9 males, 8.5 cm. in 6 females) might be due to an artificial shaping in childhood. This idea was based partly on Hrdlička's description of Fowke's specimen No. 131 (see p. 246) to the effect that each side of the frontal showed a depression as though made by a small pad. It should be stated, however, that none of the other specimens, with the possible exception of "Hansen 3," gives a similar indication. Further study of the transverse frontal curvature with the aid of the Schwartz stereograph (fig. 21) has shown that these outlines, which conform to arcs of circles with radii ranging from 4.5 to 6.5 cm., can be duplicated in part among other long-headed groups. I have not been able yet to duplicate the curves that conform to an arc of 4.5 cm. radius. However, my conclusion now is that this marked curvature and narrowness of the frontal is in general an expression of the natural longheadedness of the group; that it appears exaggerated when combined with occipital flattening; and that in a few cases it may have been increased by artificial means.

It may be pointed out that the frontal curvature in the Porter mound skulls is not unusual (Neumann, 1941a); the curves correspond to arcs of the following radii: 7.0 (350562), 6.0 (350563, 350564), and 5.5 cm. (350565). The one skull recovered at Marks-ville by Setzler in 1933 (U. S. N. M. No. 369261) has a frontal curvature corresponding to an arc of 5.5 cm. radius. With one exception these figures fit within the range of the Kansas City series (4.5-6.5 cm.).

Incidentally, the two skulls recovered from the Veazey mound in Louisiana, which has Hopewellian relationships (Collins, 1941), show deformity of the pseudocircular type (Stewart, 1941).

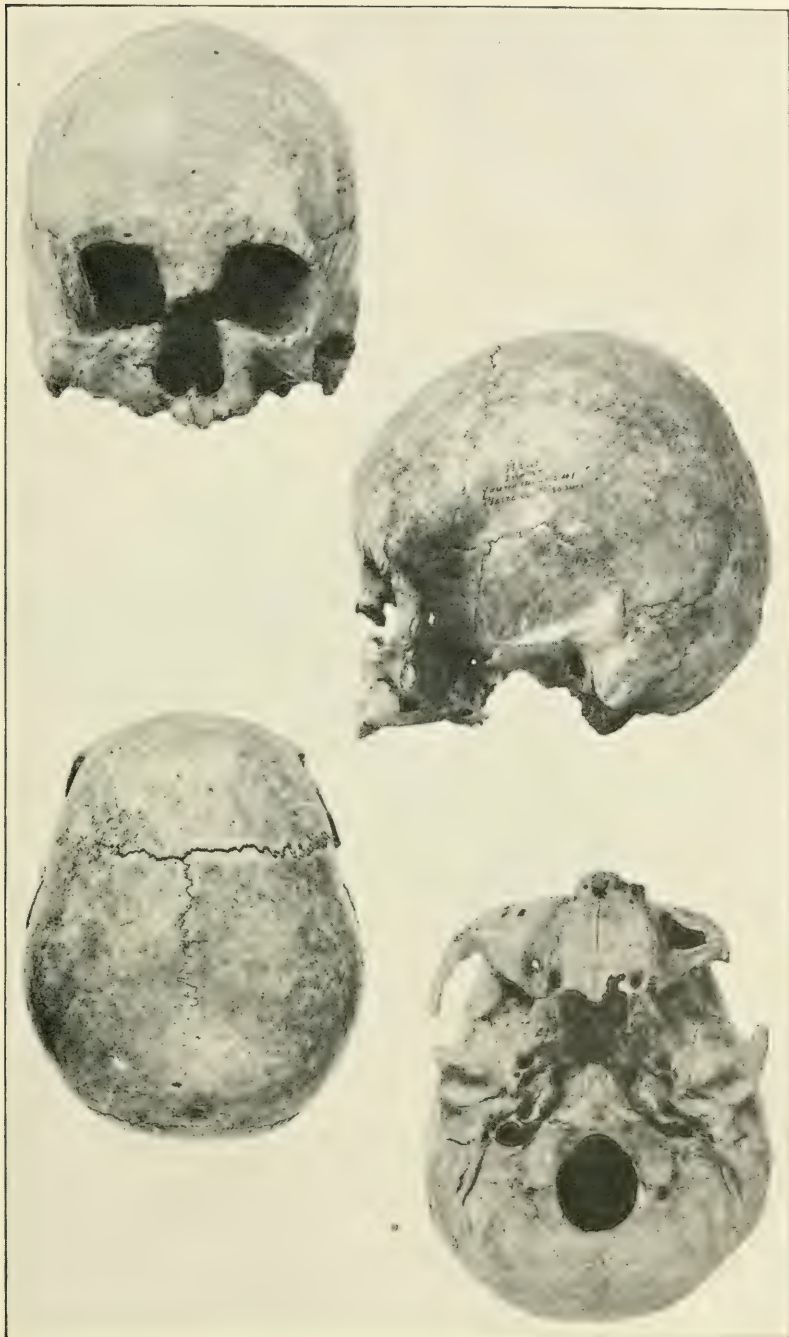
Measurements.—Table 13 also gives the detailed individual cranial measurements. These are summarized in table 15 in comparison with the Ohio Hopewellians on record and the Alabama Shell mound crania (Newman and Snow, 1942). I have employed the Shell mound crania for comparison because Neumann (1941a) has compared the Hope-



Four views of male skull ("Shippee C") from Babcock mound B.



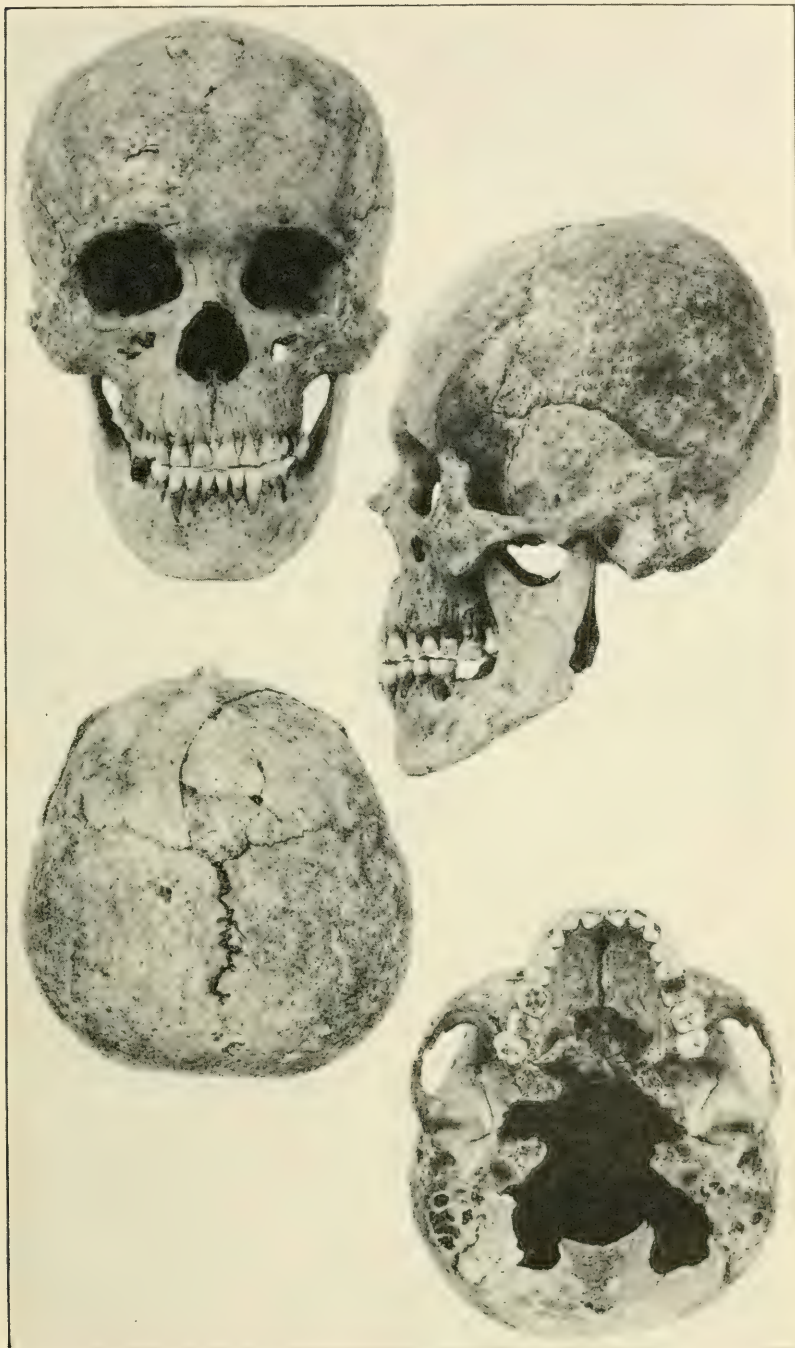
Four views of male skull (U. S. N. M. No. 379109) from Young mound 1.



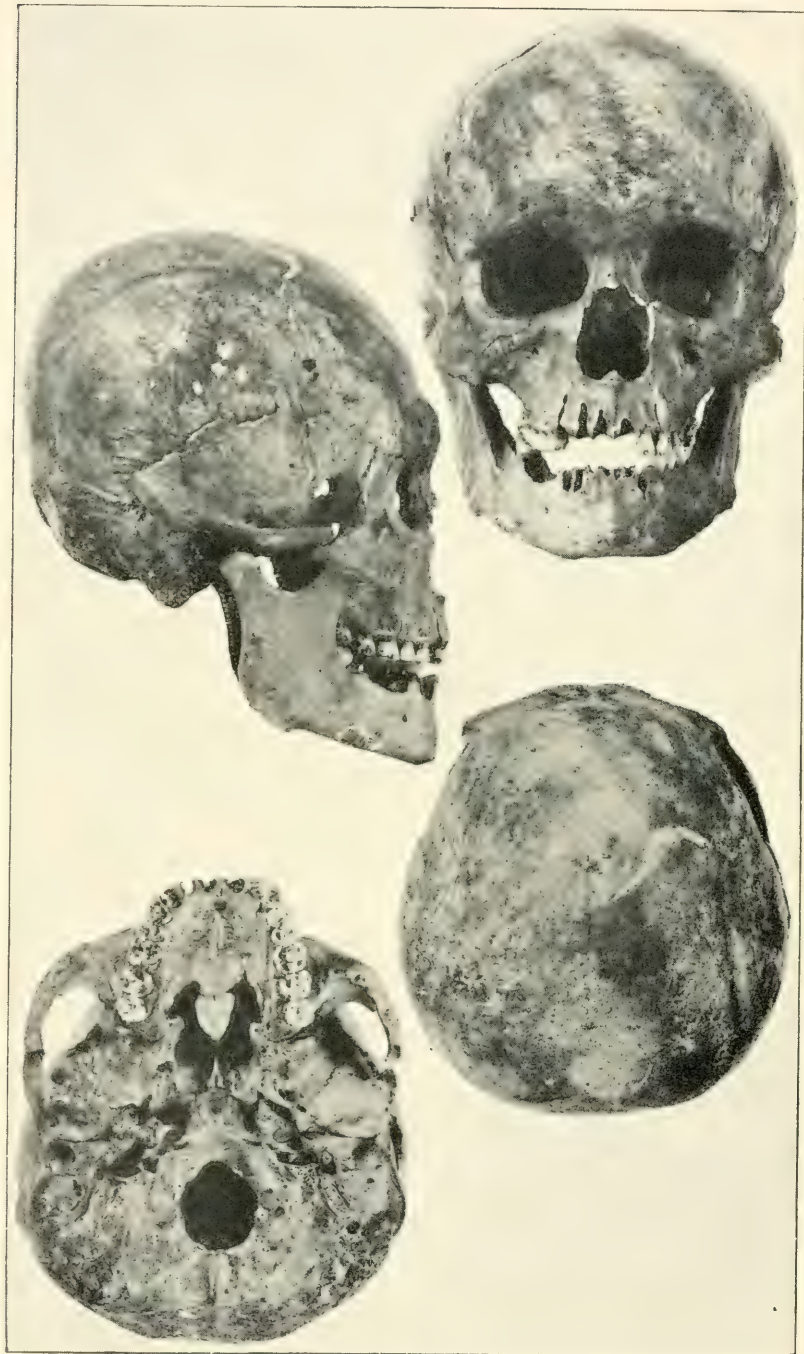
Four views of male skull (U. S. N. M. No. 379111) from Young mound 1.



Four views of male skull (U. S. N. M. No. 379113) from Young mound 1.



Four views of male skull (U. S. N. M. No. 379120) from Steed-Kisker site.



Four views of male skull (U. S. N. M. No. 379121) from Steed-Kisker site.

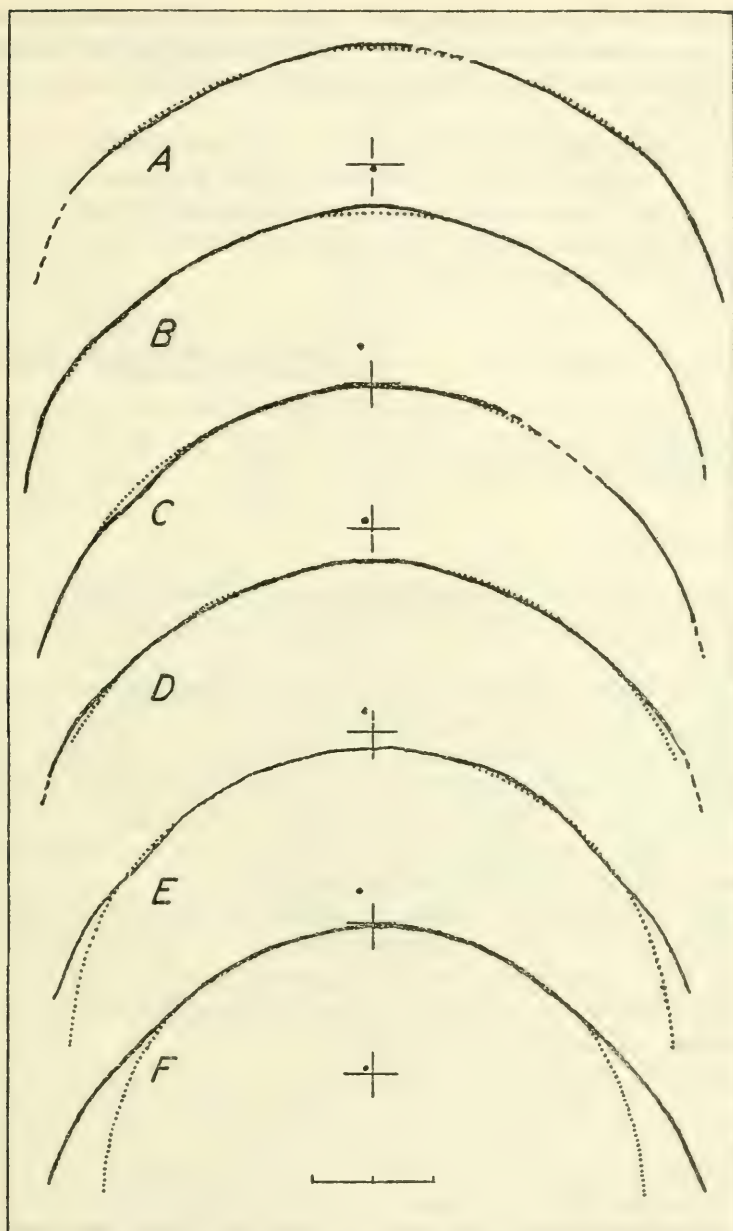


FIGURE 21.—Transverse frontal curves of six Mound series crania (see p. 247 for method). Dashes represent damage; dotted line is the true curve. The dot is the point where bregma and nasion coincide; the cross occurs where the minimum frontal diameter intersects the radius of the true curve. *A* (U. S. N. M. No. 379109), radius 6.5 cm.; *B* (379116), radius 6.0 cm.; *C* (379112), radius 5.5 cm.; *D* (379113), radius 5.5 cm.; *E* (379110), radius 5.0 cm.; *F* (379111), radius 4.5 cm. (Slightly reduced: Scale=2.0 cm.)

wellians to Woodland (Algonkian ?) groups, and Newman and Snow (1942) have done the same for the Shell mound group, but so far the Hopewellians and Shell mound peoples seem not to have been compared directly.

Although Hooton felt that the grade of deformity in the Turner series did not affect the dimensions of the vault, I cannot help but believe that this factor accounts for the brachyranic element that he detects in his primary series. Eliminating these individuals, we get a comparable range in all three series:

Group	No. (both sexes)	Average cranial index	Range of cranial index
Kansas City-----	8	73.5	68.8-76.7
Turner (primary and secondary)-----	14	75.7	67.8-79.6
Alabama Shell mound-----	95	¹ 73.8	66.0-81.2

¹ Approximately.

Only one of the Porter mound specimens (350562, C. I. 80.0) is outside this range, whereas the Marksville specimen has a cranial index around 69 or 70.

In head height, indicially but not absolutely, these groups rank with the highest on the continent (cf. Stewart, 1940b; Collins, 1941). It should be noted also that the difference between basion-bregma height and porion-bregma height in the Kansas City mound series is 2.2 cm. on the average, but individual cases range from 2.2 to 2.7 cm. In the Alabama Shell mound crania there is about the same average difference when correction is made for vertical auricular height.

If the cranial module is taken as a measure of general head size, then the Hopewellians appear to be somewhat small. In this respect they approach the Shell mound people of Alabama, which in turn are intermediate between the culturally related groups from Kentucky and Louisiana (cf. Collins, 1941, table 1).

As already stated, the minimum frontal diameter is unusually small. If we omit one female (Hansen 3) because of probable deformity, and include the three females in which this diameter is approximated, we get ranges that are similar to those for the Turner group (see below).

At the time Hooton prepared his Turner report (1922) there was little comparative material available, yet he pointed out that such a small average diameter is unusual for Indians. Judged from more recent studies, it would seem that this diameter, as well as the range,

can be duplicated over a considerable area in the Southeast, as indicated in the following comparisons:

Group	Male			Female		
	No.	average	Range	No.	Average	Range
Kansas City.....	9	9.2	8.4- 9.9	8	8.8	8.4- 9.6
Turner ¹	22	9.3	8.4-10.0	11	9.0	8.5- 9.7
Alabama Shell mound ²	54	9.3	8.3-10.3	44	9.0	8.3-10.0
Kentucky Shell mound ³	19	9.2	8.3-10.5	13	8.8	8.2- 9.6
Arkansas miscellaneous ⁴	36	9.5	8.4-10.7	52	9.0	8.0-10.0

¹ Hooton, 1922.

² Newman and Snow, 1942.

³ Skarland, 1939.

⁴ Hrdlička, 1940.

In general it seems likely that such a narrow frontal diameter occurs in groups that are long-headed and of small build (small cranial module). Other eastern groups, although nearly as long-headed, are inclined to be of more massive build.

A further gauge of frontal narrowness is supplied by the frontal index (minimum frontal diameter/frontal chord $\times$ 100). I have used this means of comparison because so many of the Kansas City specimens were fragmentary and limited to the frontal bone or skull cap. Accordingly, we get an average for the combined sexes in the Kansas City series of 79.4 (15: range 72.1-88.4), which compares to 82.2 (22: range 73.7-90.7) for the Turner primary series. In order to supply other comparative data I have measured 20 Algonkian crania from the Potomac tidewater area, and 20 miscellaneous Siouan crania. These two groups give the following results, respectively: 83.0 (76.2-91.2), 85.7 (76.1-92.5). Since the Algonkians are nearly as long-headed as the Hopewellians and the Sioux are more round-headed, the above frontal indices seem merely to reflect this difference in cranial form.

The face has been preserved in but few cases among the Hopewellians. The scanty data on the face show opposite conditions between the Missouri and Ohio Hopewellians; namely, an absolutely and relatively low face in the former and a high face in the latter. In this respect the Missouri group approaches the Southern Shell mound groups (cf. Collins, 1941, table 1).

The shape of the orbits is somewhat confusing, owing to the fact that Hooton and his students measure orbital breadth to dacryon, whereas I follow Hrdlička's custom in using lacrymale. My results thus tend to give a slightly higher index. Viewed in this light it would seem that the Missouri and Ohio Hopewellians have rather low orbits like those of the Alabama Shell mound crania.

Nasal height in the Missouri Hopewellians parallels face height and tends to be absolutely and relatively low as compared to the

Ohio series. Whether the landmark on the lower nasal border is being interpreted similarly by all observers perhaps may be questioned. I tend to get a smaller measurement now than I did some years ago, owing to a change in the definition of this landmark (cf. Stewart, 1939, pp. 30-31).

STEED-KISKER SERIES (MIDDLE MISSISSIPPI)

Condition of specimens.—Table 17 lists the crania from this site used in the present study. Only two are nearly complete; the others lack faces and the basal parts. In contrast to the mound series, and in accord with the different mode of burial, there is no evidence here of burning and few if any rodent tooth marks. No major pathological changes are observable.

Sex.—Males predominate in the ratio of 9 to 2. In only two cases does the sex determination seem questionable. Perhaps the larger and heavier skulls have preserved better.

Suture closure.—In only one case are the sutures judged to be open; two others appear to be in the stage of beginning closure; the remainder are in various stages of advanced closure (table 17). It is probable that closed sutures lend some support to the skull in resisting the crushing force of the earth and hence may account partly for the frequency of older individuals in this collection.

Teeth.—Some teeth are preserved with almost every skull (table 17), and in addition there is a miscellaneous lot of jaws—together with temporal bones the only parts of other skulls worth saving. Included among the miscellaneous jaws are those of at least two children of approximately 2 and 8 years of age.

Unlike in the Kansas City mound series, tooth wear in the Steed-Kisker series is never extreme and usually only slight to medium. On the other hand, caries is not uncommon in the molars of the Steed-Kisker series and is the principal cause of tooth loss. In young adults caries apparently begins in developmental defects (pits, fissures) in the crowns of the molars; in older individuals cervical caries and alveoloclasia make their appearance.

It is perhaps significant that the crania from Madisonville, Ohio, considered by Neumann (1941a, p. 488) to represent a relatively pure Middle Mississippi population, are reported by Hooton (1920) to have little tooth wear but considerable caries. Although many of the Madisonville crania appear to be young individuals, Hooton states (table p. 107) that out of 65 only 7 (10.8 percent) show pronounced tooth wear and 43 (66.2 percent) show slight or no wear. On the other hand, he points out (table p. 109) that 17 out of 49 (34.7 percent) had caries.

We have already seen that both the Kansas City and Turner series of Hopewellians show marked wear and almost no caries. This striking contrast between the dentitions of the Hopewellian and Middle

Mississippi peoples, both of Missouri and Ohio, can be attributed only to differences in diet. Just what this dietary factor was is not certain. There is good archeological evidence that the Middle Mississippi peoples were horticulturists, but only indirect evidence that the same was true of the Hopewellians. Also, many more animal bones and mollusk shells were found at the Renner site than at Steed-Kisker. However, even if we assume that the Hopewellians were primarily hunters and fishers, whereas the Middle Mississippi peoples were horticulturists, the greater wear of the Hopewellian's teeth still is not explained, for it is generally believed that ground corn was the major source of abrasive material in the Indian diet.

A suggestion as to the cause of the Hopewellian dental attrition comes from the parallel case of the Southern Shell mound peoples. As Leigh (1925) has pointed out in connection with Indian Knoll, Skarland (1939) for Chiggerville, and Newman and Snow (1942) for the Pickwick Basin, the teeth of these prehorticultural peoples show extreme wear and few caries. Since fresh-water shellfish are said to have been a major item in their diet, it would seem that the abrasive material causing the dental wear—perhaps river sand—must have come from this source. As for Hopewellians, their custom of collecting fresh-water pearls suggests that they too used this food source extensively. Incidentally, shellfish are undoubtedly high in food values that make for sound teeth and the Shell Mound and Hopewellian peoples are both relatively free from dental caries.

Anomalies.—Of 63 temporal bones (33 right, 30 left) only two (1 right, 1 left) show traces of ear exostoses. Of 59 of these bones in which the tympanic plate is preserved only 6 (3 right, 3 left) show small perforations (10.2 percent).

Hooton (1920, p. 85) states that no ear exostoses are present in the Madisonville crania. However, he found dehiscences or perforations of the floor of the auditory meatus in 26 (13 right, 13 left) out of 144 sides (18.0 percent). Thus perforations are more common here than in the Steed-Kisker series. Nevertheless, it can be said that perforation of the tympanic plate is not a feature of either of these series.

Deformation.—The skulls affected by artificial deformation are listed in table 17. Since the skulls appear quite rounded and in some instances show postmortem warping, it is difficult to judge the grades of deformity. Pressure seems to have been applied directly to the occiput, perhaps by means of a cradleboard, and probably thus was unintentional.

The frontal bones, although broader and much less curved than in the Hopewellians, do not give indications of artificial flattening. Transverse curves of the frontal bones (fig. 22) conform to arcs with radii ranging from 7.5 to 8.0 cm. only.

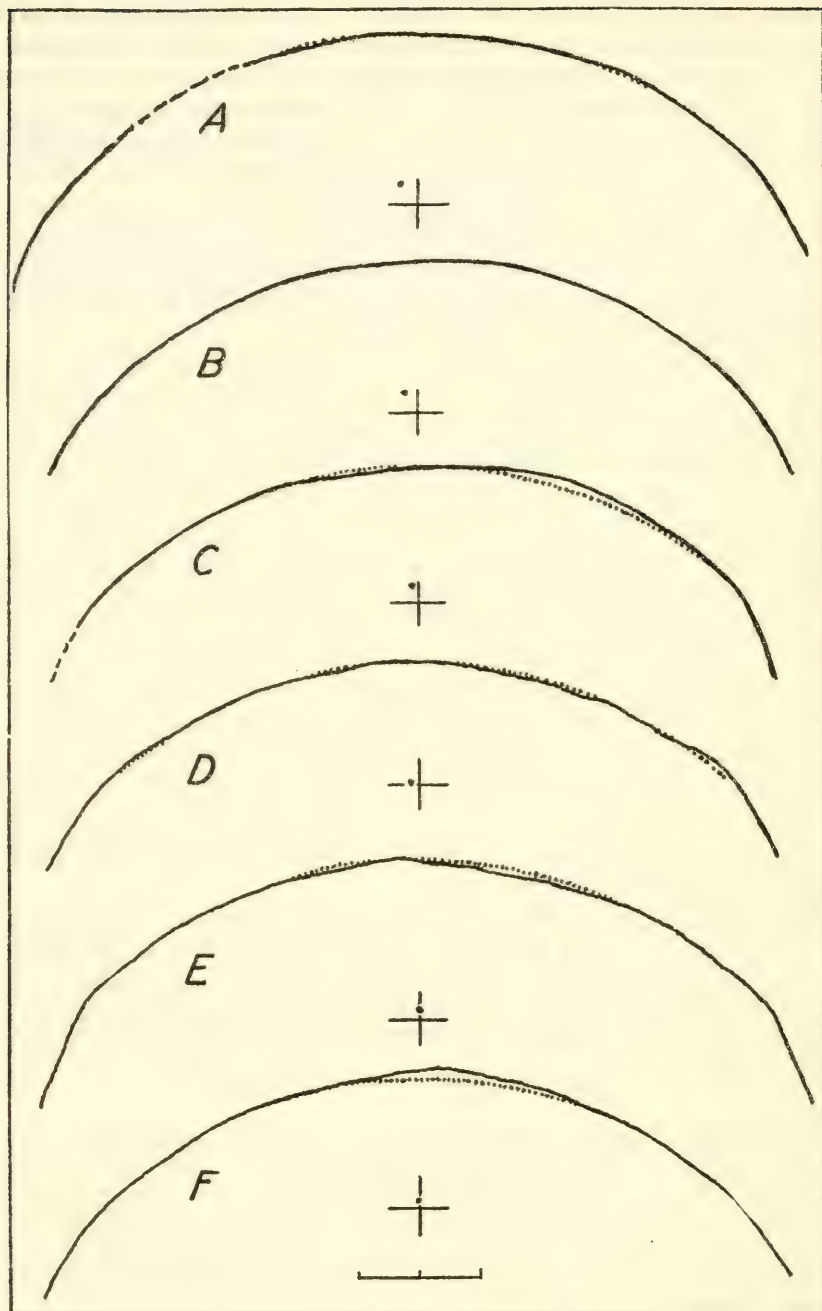


FIGURE 22.—Transverse frontal curves of six Steed-Kisker series crania made in the same way as those of fig. 21: *A* (U.S.N.M. No. 379125), radius 8.0 cm.; *B* (379130), radius 7.5 cm.; *C* (379128), radius 7.5 cm.; *D* (379119), radius 7.5 cm.; *E* (379120), radius 7.5 cm.; *F* (379121), radius 7.5 cm. (Slightly reduced: Scale=2.0 cm.)

In the Madisonville series Hooton (1920, p. 85) found occipital flattening in all but 19 out of a total of 82 crania. Of the deformed skulls only 9 showed a grade of deformity rated as medium or pronounced; in 54 the grade was considered slight. No frontal flattening was reported.

It is interesting to note also that the crania from the Wallace mound near Omaha, Nebr., described briefly by Poynter (1915) and believed by Strong (1935) to represent the Nebraska Culture, which in turn has Middle Mississippi relationships, are slightly deformed in the majority (26: average cranial index 85.2; range 80.0-92.7). Again, the Dickson site in Illinois, a Middle Mississippi site that has many traits in common with Steed-Kisker, yielded only 17 undeformed adult male crania sufficiently complete for study out of a total of 230 burials (Neumann, 1937). This suggests a rather high frequency of deformity. Apparently this is generally true of Middle Mississippi sites (cf. Newman and Snow, 1942).

Measurements.—Individual measurements are given in table 17 and are summarized for the males in table 18 in comparison with other Middle Mississippi series. Because deformity is so common in this group, the best representation of the undeformed type is that assembled by Neumann (1941b) in his "Spoon River focus" series. On the average the undeformed appear to be mesocranial and thus somewhat more roundheaded than the Hopewellian-Woodland type. Whether all traces of deformity have been eliminated from the "Spoon River focus" series may possibly be questioned on account of the high standard deviations.

Head height appears to be variable in the several series. The skulls from Steed-Kisker and Madisonville, in spite of occipital flattening, tend to be absolutely and relatively lower than those from Koger's Island and "Spoon River." The females from Madisonville show the same trend as the males (24: average mean height index 84.3). However, the distribution of the mean height indices in the Madisonville series is not far different from that characterizing other series from the Northeast (cf. Stewart, 1940, table 1):

Group	No.	Range			Average (both sexes)
		$\bar{x} - 80.4$	80.5-83.4	83.5 - $\bar{x}$	
		Percent	Percent	Percent	
New York State.....	(116)	6.9	25.9	67.2	84.9
Huron.....	(24)	12.5	29.2	58.3	84.8
Madisonville.....	(66)	9.1	27.3	63.6	84.4

The one specimen from Steed-Kisker for which the mean height index is available (81.4) thus falls well within this range. Noteworthy, too,

is the fact that the porion-bregma height is essentially the same in the Steed-Kisker and Kansas City mound series.

The Wallace mound crania from Nebraska (Poynter, 1915), are rather high-headed (26: average mean height index 89.5) and in this respect agree with the series from Koger's Island and "Spoon River."

Cranial module appears to be much the same in all the series, both Middle Mississippi and Hopewellian. Unfortunately, this measure is available in only one case for the Steed-Kisker series. Usually, however, the Middle Mississippi skulls appear to be more massive than those of the Hopewellians.

The frontal chord has been taken only on the Steed-Kisker series of the Middle Mississippi peoples, but the minimum frontal diameter is available for all the groups. Both of these measures show a slightly greater average than for the Hopewellians. Because both of these measures are proportionately greater in the Steed-Kisker series, the resulting frontal index is very little different from that of the Hopewellians.

Face height is perhaps not quite so variable in the Middle Mississippi groups as among the Hopewellians. Indicially, too, there is considerable uniformity and no marked difference from the Hopewellians, although an absolutely and relatively broader face might be expected in the Middle Mississippi groups on account of their broader heads.

Orbital height is much the same in the Middle Mississippi and Hopewellian groups. Discounting differences in the technique of taking orbital breadth, much the same average measure occurs in all the groups. Thus, a similar rather low index is to be found throughout.

A similar condition appears in the nose measurements, although the breadth may be slightly greater among the Middle Mississippi peoples.

The measurements of the upper alveolus indicate that this structure is both larger and broader in the Middle Mississippi peoples than in the Hopewellians. The broader alveolus probably correlates with the broader head.

SKELETONS

MOUND SERIES (HOPEWELLIAN)

Relatively few postcranial bones were recovered, and these are largely fragmentary. Like the skulls from the stone vaults, the long-bones also show many rodent tooth marks. More specifically, there are 10 humeri, 7 femora, and 8 tibiae in which these marks are especially evident. As usual the tooth marks are restricted to borders and ridges.

Pathology.—A considerable number of pathological long-bones are included in the collection, and at least six of the mounds are thus represented. The most commonly and extensively affected bone is the tibia, of which 7 right and 4 left are present. Other involved bones include one right humerus, 2 right and 1 left ulnae, one right femur,

and several fragments of fibulae. The pathological condition here represented is probably syphilis.

Hooton (1922, p. 129) noted in his description of the Turner series that "the tibiae of one female are 'boomerang'-shaped, and show inflammatory thickening in the middle portions of the shafts. Similar inflammatory thickenings occur in the middle portions of the shafts of two other pairs of female tibiae." Williams (1932, pp. 959-962) has published pictures and a description of a pair of tibiae from burial 4 of Hopewell (Ohio) mound 2; he regards these as being affected by syphilis. Furthermore, there is evidence of the same condition at the Veazey mound in Louisiana (Collins, 1941, p. 146). Thus this disease condition is well represented in the Hopewellian skeletal remains so far recovered.

Measurements.—The long-bones sufficiently complete for measurement are limited to 4 femora (1 male, 3 female), 5 tibiae (1 male, 4 female), 4 humeri (2 male, 2 female), and 1 clavicle (male). Individual measurements are given in tables 19 and 20.

Very little can be said about the few femoral measurements except that the lengths are shorter, the subtrochanteric region is flatter, and the midshaft is rounder, as compared with the averages for the Turner series (cf. Hooton, 1922, pp. 125-128). The male range of bicondylar length in the Turner series is 41.3-46.1 cm., so our lone male, which just comes within the lower extreme of this range, may be well below the average size of the group. Computing stature from these figures with the aid of Manouvrier's tables (Hrdlička, 1939, pp. 174-175), we get 160 cm. for the male and 156-157 cm. for the females.

Third trochanters of considerable size (medium to large) were seen in 5 (3 right, and 2 left) out of 17 cases. The gluteal ridge tends generally to be well developed. In analyzing the condition of the third trochanter in the Turner series, Hooton says (1922, p. 128): "The third trochanter in some form appears in all of the males, and 4 of 6 females."

In general, all that can be said of the few tibial measurements is that length is greater, and shape of shaft rounder, than in the Turner series (cf. Hooton, 1922, p. 128). Stature may be estimated at 173 cm. for the male and 161-163 cm. for the females.

Unfortunately, no comparative data on the humerus are available for the other Hopewellians. The lengths of the humeri in the present series give the following stature ranges: Male, 155-174; female, 157-161 cm.

Septal apertures of the humerus appear to be quite common and tend to large size (right—16: 8 absent, 2 small, 2 medium, 4 large; left—9: 3 absent, 1 small, 2 medium, 3 large).

The single whole right clavicle present measures 14.8 cm. in maximum length and is judged to be male.

In attempting to arrive at the stature of this group we may average the computed statures for all the long-bones. By this means we get a little more than 165 cm. for males and in excess of 159 cm. for females. Of stature in the Turner group Hooton says (1922, p. 126): "The females are estimated at 157 cm. in stature and the males at 164.8 cm. The sex ratio is unreasonably low (1.049)."

STEED-KISKER SERIES (MIDDLE MISSISSIPPI)

The whole long-bones recovered from this site are greater in number than those from the mounds, but still unsatisfactory on statistical grounds and much more fragile. Like the skulls from the same site these bones are almost completely free from rodent tooth marks.

Pathology.—The distal ends of two tibiae, probably a pair (skeleton 78, U.S.N.M. No. 379136), show osteitis such as is generally believed to be the result of syphilis. Whether this small number of pathological bones indicates a low incidence of syphilis in this group is uncertain in view of the poor state of preservation of the skeletal material in this cemetery.

Hooton has listed individual pathological bones in the Madisonville series without, however, indicating whether any are from the same skeleton (1920, p. 131):

Humeri. In two subjects the humeri show signs of moderate osteoperiostitis. . . .

Radii. Moderate osteoperiostitis was observed in three cases, both sides being affected in two of the subjects.

Ulnae. . . . Three other subjects show moderate to pronounced osteoperiostitis affecting both ulnae in two instances. In the third only the right ulna is preserved and the disease has affected the distal half of the bone.

Femora. . . . In three other subjects moderate osteoperiostitis has affected the distal halves of the femora.

Tibiae. . . . In nine individuals inflammatory changes have taken place in the tibial shafts, ranging from slight localized periostitis to extensive osteoperiostitis affecting the entire shaft.

Langdon (1881), in an earlier study of other material from Madisonville, also fails to mention the number of individuals affected by this disease condition, although he pictures and describes some bones thus affected. Since Hooton examined 99 adult and subadult skeletons and Langdon examined 662 skeletons of all ages, it does not appear that syphilis was very common at Madisonville.

Measurements.—The long-bones available for measurement consist of 18 femora (11 male, 7 female), 8 tibiae (all male), 3 humeri (all male), and 1 radius (male). Sexing is difficult in some cases because the proximal and distal ends are damaged. Individual measurements are given in tables 19 and 20.

Only male femora are sufficiently numerous to justify detailed com-

parison with the Madisonville series (table 21). Except for the inclusion of one tall individual in the Steed-Kisker series, the ranges of this series generally fall within those of Madisonville. The chief divergence of the two groups is in the minimum diameter of the upper flattening, where the Madisonville series exceeds that of Steed-Kisker. In this case I suspect a difference in the technique of measurement.

Hooton (1920, p. 122) has computed average stature from the Madisonville male femora as a little less than 167 cm., and from the female femora as about 155 cm. Because of the inclusion of taller individuals among both sexes of the Steed-Kisker series, stature here exceeds 167 cm. in the males and exceeds 157 cm. in the females. Thus the males at least somewhat exceed the figure arrived at for stature in the Kansas City mound series.

Third trochanters were observed in 6 femora (4 large, 2 small) of the Steed-Kisker collection, but the bones are in such poor condition that more detailed observations on this feature are not justified. Of the Madisonville femora Hooton says in this connection (1920, p. 125) that "the third trochanter occurs as a rounded tuberosity in 10.6 per cent of males and in 12.5 per cent of females." This appears to be fairly comparable.

All that can be said of the tibia and humerus is that the individual measurements fall within the ranges of the Madisonville series. Of 4 distal ends of humeri present none shows a septal aperture. This is in line with Hooton's finding for Madisonville (1920, p. 129): 22 percent of 96 bones of both sexes. According to Hrdlička's survey (1932, p. 36), such a figure is very low for American Indians.

The single left radius present has a maximum length of 25.2 cm., which exceeds the male average for Madisonville (24.2 cm.).

SUMMARY

The two skeletal series from near Kansas City, Mo., differing in culture and probably also somewhat in age, have been shown to be markedly different also in morphological details. In brief, the Mound series, which seems to be the older, is lighter in build, longer headed and less commonly affected by occipital deformity, probably higher headed (relatively), and has a much more pronounced transverse frontal curvature. Unfortunately, the face has been poorly preserved in both series, but the longheaded mound peoples, or Hopewellians, seem to have inclined to relatively long and narrow faces, whereas the Steed-Kisker Middle Mississippians seem to have been broader faced. The teeth of the Hopewellians, too, are characterized by extreme wear and few caries, as compared to little wear and many caries in the Middle Mississippi group. Average stature may not have been very different, but possibly favored the generally more massive Steed-Kisker people. Both groups seem to have been afflicted with syphilis.

Aside from these contrasts between the two local groups, it has been shown that each of these series is remarkably similar to series from the same culture in other regions, particularly Ohio. Thus, the Turner site Hopewellians and the Madisonville Middle Mississippians, which seem to have the same cultural and chronological relationships as the Missouri series, show much the same morphological peculiarities as have been summarized above. In addition, the Hopewellians as a whole are shown to compare rather favorably with the still earlier southern Shell mound population. Furthermore, the Middle Mississippi series show similarities to the Koger's Island series, which represents a population of about the same period that succeeded the Shell mound population in the Southeast.

DISCUSSION

The Missouri River, draining as it does a large part of the central and northern Great Plains, must have constituted in the past one of the main migration routes between these areas and the lower Mississippi Valley. The occurrence of many large archeological sites of different cultures along its course (Fowke, 1910; Wedel, 1940; Strong, 1935, 1940) bears witness to its importance in this connection. In spite of intensive archeological activity here during the past half century, however, few skeletons with clear cultural associations have been described according to modern anthropometric standards. Indeed, with the possible exception of two of Hrdlička's reports (1909, 1910), the present study is the first to meet these requirements. Hrdlička's reports are unsatisfactory only because the material that he had available was very fragmentary or could not be subdivided on cultural grounds.

In addition to his reports on Fowke's and Gilder's material, Hrdlička has supplied three other brief accounts of skeletal remains from the lower Missouri River area (1907, 1923, 1927). In the first of these he describes the "Lansing skeleton" (Kansas) and the "Loess Man" skeletons from the Gilder mound in Nebraska. The age of these finds has been debated partly because they were not found in association with cultural objects. Hrdlička's second report (1923) concerns the type of deformity exhibited by a skull dredged up near Kansas City, Mo. (cf. Stewart, 1941). His last report is the Catalogue of Crania in the United States National Museum Collections (1927), which adds to the foregoing, aside from historic material, only two skulls. Of these it is known merely that they are from Council Bluffs, Iowa.

Poynter (1915) has supplied the only other skeletal data from this area; namely, three to five average measurements (with ranges) on series of skulls from four sites near Omaha, Nebr. In this case no cultural information is given and it is only through the subsequent

work of Strong (1935) that some of the relationships of this material are dimly seen.

The scarcity of culturally identified skeletal data from this key area is a great handicap in explaining the prehistory of the Plains peoples. As Hrdlička (1927) first pointed out and I (1940b) have since emphasized, the historic Plains tribes, especially Siouan and Caddoan, are characterized primarily by an extremely low vault (mean height index of 108 Sioux is 79.5; of 154 Arikara, 82.3), a feature not reported from east of the Mississippi. Thus far the origin and history of this physical type has not been worked out, but this can be accomplished only through archeological means.

When we inspect the data on the "prehistoric" skeletal remains mentioned above, we find that, unlike those for the historic tribes of this region, they show high-headedness. Using the mean height index as a gauge, we have the following figures:

Lansing skull—Kansas (Hrdlička, 1907, p. 50)-----	85.4
"Loess man"—Gilder mound skull 1 (Hrdlička, 1907, p. 77)-----	83.5
(Skulls 6 and 8 are said to be of medium height.)	
Fowke No. 19—Missouri (Hrdlička, 1910, p. 105)-----	90.7
Fowke No. 128—Missouri (Hrdlička, 1910, p. 108)-----	83.8
Average of 26 Wallace mound crania—Nebraska (Poynter, 1915, p. 512)-----	89.5
Average of 25 Plattsmouth Group crania—Nebraska (Poynter, 1915, p. 513)-----	89.7
Average of 6 Fort Lisa crania—Nebraska (Poynter, 1915, p. 514)-----	86.1
Average of 18 Long's Hill crania—Nebraska (Poynter, 1915, p. 519)-----	86.0
U. S. N. M. No. 305102—Iowa (Hrdlička, 1927, p. 39)-----	89.0
Average-----	87.1

Since these early highheads, together with those that form the basis of the present report, include representatives of at least the Woodland, Hopewellian, and Middle Mississippi cultures, it is difficult to believe that any of these groups gave rise to the low-headed peoples that occupied this region in historic times.

On the other hand, this distribution of early highheads may bear out the long-standing hypothesis that the ancestors of the historic Plains tribes reached the Plains by a more northern route. Whether they came from the East or Northwest cannot be determined by evidence now available. However, I may mention that Hrdlička's measurements of crania from North Dakota and South Dakota mounds (1927, pp. 68-71), which Strong (1940, p. 386) has characterized as "an attenuated eastern 'mound-building' culture decidedly exotic in the northern prairies," show them to be low-headed (mean height index of 20 is 81.6). As already pointed out, such low-headedness has not been reported from the mound area of the East.

In comparing the stature of the prehistoric population with that for the historic tribes of this region we are confronted with two difficulties: (1) that of accurately reconstructing stature from long-bone length and (2) that of securing a true average from small samples. Assuming that 166-167 cm. represents the true mean reconstructed

stature for males, and even allowing +3 cm. as a possible error in this reconstruction, the result still does not equal that obtained on the modern Sioux (Hrdlička, 1931). Like most of the recent Plains tribes the Sioux have a stature of about 172.4–175.7. On the other hand, our figures for the females, similarly corrected, are fairly close to the averages for the modern Sioux (159.1–160.1 cm.). Although the disparity in male stature seems too great for samples of the same people, it is unwise to speculate on this uncertain evidence until data become available for stature reconstructed from the bones of the recent tribes.

Turning from the negative evidence that the present collection brings to bear on the history of late Plains tribes, we may consider the positive evidence of connections to the east. It seems clear, both from cultural and physical evidence, that the two Kansas City groups under discussion are somewhat peripheral representatives of widespread Mississippi Valley population movements. Archeologists are relatively certain only of the succession of the general cultures involved, but also see faintly certain directional trends and a relative chronology. The skeletal remains show, as in the present case, that rather distinct physical types are associated with the different cultures (cf. Neumann, 1941a and b). I believe, too, that physical anthropology can point to certain evidence that has a bearing on relative chronology.

In 1940 I summarized the evidence then available for a late appearance in North America of syphilis, and, at least in the eastern part of the continent, of intentional cranial deformity. Although it was tempting to relate these phenomena to the date of discovery of America, there was no positive evidence on this point. The material of the present report indicates, as was already known, that syphilis existed here in Hopewellian times. The Pickwick Basin report (Newman and Snow, 1942) now supports by its negative evidence my impression that this disease was absent in the prepottery Shell Mound populations of the Southeast. However, the same report states (pp. 467–8) that syphilis was present in the more recent Koger's Island people. The authors are inclined to accept the view that this group represents a prehistoric population, but at the same time point out that its cultural affiliations are with Moundville. On this point Ford and Willey (1941, p. 350) have concluded independently that Moundville "was abandoned sometime before 1700. In spite of the large size of this site, it seems to have been occupied only a short time."

As for intentional cranial deformity, it has been shown that the material of the present study was not thus affected. In general it may be said that this custom did not extend much beyond the Gulf States, and is found there only in the latest archeological periods. The very fact of its restricted distribution also argues for its lateness. In this

connection, therefore, it is perhaps significant that the two Hopewellian skulls from the Veazey mound in Louisiana (Collins, 1941) are intentionally deformed. Because of the deformity these skulls cannot be compared directly with undeformed Hopewellian skulls from elsewhere. However, there would seem to be good grounds for regarding the Veazey site either as being fairly late or having acquired early the custom of intentional deformity through proximity to the center of origin of this custom. Whether the slight lateral frontal compression occasionally seen in the Kansas City Hopewellian skulls has any connection with the mature custom as exhibited by the Veazey skulls is uncertain.

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sn- ot.	Orb. ht.	Orb. br.	Orb. index	Nasal ht.	Nasal br.	Nasal ind.	Ext. alv. lt.	Ext. alv. br.	Ext. alv. ind.
	3.3L	3.7L	89.2	4.95	2.6?	52.5			
	3.6R	3.9R	92.3	5.3	2.7	50.9	5.3	(6.6)	(124.5)
1.2)	3.4M	3.9M	87.2	4.55	2.6	57.1			

1.7?				4.8?	2.3	47.9	5.2	6.3	121.2
1.4?	3.5R	3.9?R	89.7	5.0	2.6	52.0	5.8	6.6	113.8
1.5)	(3.3)L	3.8L	(86.8)	5.1	2.6?	51.0			

TABLE 14.—*Mound series (Hopewellian): Condition of crania*

Collector's No.	U. S. N. M. No.	Site	Completeness of specimen ¹	Sex	Status of sutures
Fowke 131 ²		Brenner mound 2	Calva	Male	Obliterated endocranially; partly obliterated ectocranially.
Hansen 1		Babcock mound B	Calva with right temporal	do	Obliterated.
Hansen 2		do	Calva	Female	Sagittal suture partly obliterated. Endocranially and ectocranially.
Hansen 3		do	Frontal bone	do	Beginning closure of coronoid (?)
Hansen 4		do	do	Child	Trace of metopic suture and anterior fontanelle.
Hansen 5		do	Damaged frontal bone and part of right parietal.	Male?	Coronal suture on right nearly obliterated; anterior part of sagittal open.
Shippée A		do	Fragmentary calva	Female?	Nearly closed endocranially; open ectocranially.
Shippée B		do	Damaged calvaria without left temporal.	Female	All but lambdoid nearly obliterated.
Shippée C		do	Damaged calvarium	Male	Do.
Shippée D		do	Posterior part of skull without left temporal.	Male?	Obliterated endocranially; partly obliterated ectocranially.
1	379099	Pearl mound C	Damaged calvarium	Female	Open.
2	379100	do	Posterior part of skull and both jaws	Male?	Sagittal suture partly closed endocranially and ectocranially.
3	379101	do	Damaged calvarium	Female	Open.
4	379102	do	Calvarium	do	Do.
5	379103	do	Damaged calvaria	Male?	Do.
6	379104	do	Damaged calva (burned)	do	?
1	379109	Young mound 1	Damaged calvarium	Male	Beginning closure.
2	379110	do	Calva with right temporal (burned)	do	Obliterated endocranially; nearly obliterated ectocranially.
3	379111	do	Calvarium	Female	Sagittal suture partly closed endocranially and ectocranially.
4	379112	do	Damaged calva with right temporal and fragments (burned).	do	Some stage of closure.
5	379113	do	Slightly damaged cranium	Male	Nearly obliterated endocranially and ectocranially.
	379116	Nolan mound A	Damaged cranium (face fragmentary)	do	Beginning closure (?)

¹ Cranium—complete skull with lower jaw; calvarium—complete skull without lower jaw; calvaria—without face and lower jaw; calva—skull cap.
² Part of Fowke's uncataloged collection in the U. S. National Museum.

TABLE 15.—*Mound series (Hopewellian): Comparison with other groups*

MALES

Measurements and indices	Missouri	Ohio ¹			Alabama ¹
		Turner I	Turner II	Porter	
Diam. a.-p. max.....	18.9 (5)	18.4 (12)	18.4 (7)	18.7 (1)	18.3 (54)
Diam. lat. max.....	13.7 (5)	13.9 (9)	13.6 (7)	13.9 (1)	13.4 (55)
Bas.-breg. ht.....	14.2 (2)	14.3 (3)	13.7 (1)	14.2 (1)	14.0 (28)
Por.-breg. ht.....	11.8 (6)	-----	-----	11.8 (1)	³ 11.9 (21)
Cranial index.....	72.4 (5)	74.5 (9)	74.7 (6)	74.3 (1)	73.4 (52)
Mean ht. index.....	88.0 (2)	87.8 (3)	(92.2) (1)	87.1 (1)	88.4 (Cal.)
Cranial module.....	15.4 (2)	15.2 (2)	-----	15.6 (1)	15.3 (27)
Front. chord.....	11.4 (10)	⁴ 11.3 (13)	-----	11.2 (1)	-----
Diam. fr. min.....	9.2 (9)	9.3 (12)	9.4 (10)	9.6 (1)	9.3 (54)
Front. index.....	80.5 (9)	82.1 (12)	-----	85.7 (1)	-----
Fac. ht., upper.....	7.2 (2)	7.7 (4)	7.6 (4)	-----	7.1 (33)
Diam. biz. max.....	14.0 (2)	13.7 (1)	14.2 (3)	(13.1) (1)	14.1 (21)
Fac. ind., upper.....	52.1 (1)	58.4 (1)	55.7 (2)	-----	51.3 (10)
Basion-nasion.....	10.5 (2)	10.5 (2)	10.4 (1)	11.3 (1)	10.3 (28)
Bas.-alv. point.....	-----	10.1 (3)	9.8 (1)	-----	9.7 (18)
Orbital ht., mean.....	3.4 (3)	3.6 (3)	3.5 (6)	-----	3.5 (L15)
Orbital br., mean.....	3.8 (3)	⁵ 3.9 (3)	⁵ 4.1 (6)	-----	⁴ 4.1 (L7)
Orbital index, mean.....	89.6 (3)	90.9 (3)	85.8 (5)	-----	86.7 (L7)
Nasal ht.....	4.9 (3)	5.3 (4)	5.3 (5)	-----	5.0 (39)
Nasal br.....	2.6 (3)	2.7 (5)	2.6 (5)	2.6 (1)	2.6 (34)
Nasal index.....	53.5 (3)	52.0 (4)	45.9 (5)	-----	49.3 (32)
Ext. alv. lt.....	5.3 (1)	5.5 (2)	5.6 (5)	-----	5.3 (11)
Ext. alv. br.....	-----	6.6 (2)	6.6 (5)	-----	6.3 (9)
Ext. alv. index.....	-----	115.0 (2)	117.7 (5)	-----	120.5 (8)

FEMALES

Diam. a.-p. max.....	17.8 (4)	17.5 (7)	17.2 (1)	17.7 (2)	17.6 (45)
Diam. lat. max.....	13.4 (3)	13.7 (7)	12.6 (1)	13.8 (2)	13.1 (49)
Bas.-breg. ht.....	13.9 (3)	13.7 (3)	-----	-----	13.5 (19)
Por.-breg. ht.....	11.5 (6)	-----	-----	11.3 (1)	³ 11.5 (12)
Cranial index.....	75.4 (3)	77.9 (7)	73.3 (1)	78.0 (2)	74.3 (43)
Mean ht. index.....	90.1 (3)	89.1 (3)	-----	-----	88.1 (Cal.)
Cranial module.....	14.7 (2)	14.9 (3)	-----	-----	14.8 (17)
Frontal chord.....	10.9 (8)	⁴ 10.9 (10)	-----	11.2 (2)	-----
Diam. fr. min.....	8.5 (6)	9.0 (10)	8.9 (1)	8.9 (2)	9.0 (44)
Frontal index.....	77.6 (6)	82.4 (10)	-----	79.8 (2)	-----
Fac. ht., upper.....	7.0 (2)	7.3 (5)	-----	7.0 (1)	6.6 (22)
Diam. biz. max.....	12.9 (2)	12.9 (1)	-----	12.9 (1)	12.8 (16)
Fac. ind., upper.....	53.9 (1)	54.4 (2)	-----	54.3 (1)	52.8 (10)
Basion-nasion.....	10.3 (3)	10.3 (1)	-----	-----	9.9 (18)
Bas.-alv. point.....	10.0 (2)	10.0 (1)	-----	-----	9.7 (9)
Orbital ht., mean.....	3.5 (1)	3.4 (5)	3.5 (1)	3.4 (1)	3.4 (L10)
Orbital br., mean.....	3.8 (2)	⁵ 3.9 (5)	⁵ 3.8 (1)	3.8 (1)	⁵ 3.9 (L6)
Orbital index, mean.....	89.7 (1)	87.9 (5)	92.6 (1)	89.5 (1)	86.6 (L6)
Nasal ht.....	5.0 (3)	5.1 (4)	-----	5.0 (1)	4.8 (28)
Nasal br.....	2.5 (3)	2.5 (4)	2.6 (1)	2.8 (1)	2.4 (23)
Nasal index.....	50.3 (3)	48.9 (4)	-----	56.0 (1)	50.1 (20)
Ext. alv. lt.....	5.5 (2)	5.5 (6)	5.3 (1)	5.5 (1)	5.2 (8)
Ext. alv. br.....	6.4 (2)	6.4 (6)	6.2 (1)	-----	6.2 (10)
Ext. alv. index.....	117.5 (2)	116.7 (6)	117.0 (1)	-----	120.5 (7)

¹ Hooton, 1922; Neumann, 1941a.² Newman and Snow, 1942: Total Shell mound series.³ Measured vertically to apex in the Frankfort position; probably one or two mm. higher than porion-bregma height.⁴ Kindly supplied by Marshall T. Newman.⁵ To dacryon.

s by sex

Basion- alv. pt.	Orb. ht.	Orb. br.	Orb. index	Nasal ht.	Nasal br.	Nasal ind.	Ext. alv. lt.	Ext. alv. br.	Ext. alv. ind.
	3.3M	3.7M	89.2	5.1	2.8	54.9	5.6?	7.2?	128.6
10.6	3.25R	3.8?R	85.5	5.4	2.7	50.0	5.8	6.9	119.0
	3.4R	4.0?L	85.0	5.4	2.8	51.8			

TABLE 16
Steel-Kaiser Correlation Matrix: Multivariate normal distribution, $n = 10$, multivariate $\chi^2_{(9)}$

TABLE 17.—*Steed-Kisker series (Middle Mississippi) : Conditions of crania*

Collector's No.	U. S. N. M. No.	Completeness of specimen	Sex	Status of sutures	Tooth wear
7.....	379119	Damaged calvaria.....	Male....	Nearly obliterated endocranially and ectocranially.	
9.....	379120	Damaged cranium.....	do.....	Open.....	Slight to medium.
15.....	379121	Slightly damaged cranium.	do.....	Nearly obliterated endocranially and ectocranially.	Medium.
23.....	379124	Fragmentary cranium lacking most of parietals and occipital.	Male?....	do.....	Moderate.
28.....	379125	Calvarium without basal parts and with postmortem warping.	Male....	Beginning closure?.....	Slight.
33.....	379126	Fragmentary calva with jaw fragments.	Female?..	Probably partly closed endocranially and ectocranially.	Medium.
38.....	379127	Fragmentary cranium with postmortem warping.	Male....	Partly obliterated endocranially and ectocranially.	Slight to medium.
38.....	379128	Damaged calvarium.....	do.....	Obliterated endocranially and partly obliterated ectocranially.	(Considerable antemortem loss.)
N. of 38.....	379129	Fragmentary cranium with postmortem warping.	Female..	Beginning closure?.....	Slight to medium.
41.....	379130	Damaged calvarium.....	Male....	Partly closed endocranially and ectocranially.	Do.
57.....	379132	Fragmentary calva with lower jaw.	do.....	All but lambdoid obliterated endocranially and ectocranially.	Do.

TABLE 18.—*Steed-Kisker series (Middle Mississippi): Comparison with other groups. Males*

Measurements and indices	Missouri		Ohio ¹		Illinois ²		Alabama ³	
Diam. a.-p. max.....	(17.0)	(5)	(17.7)	(52)	18.0	(27)	(17.4)	(20)
Diam. lat. max.....	(15.3)	(5)	(14.6)	(52)	14.0	(27)	(14.5)	(20)
Bas.-breg. ht.....	13.4	(1)	13.7	(42)	14.6	(24)	14.4	(25)
Por.-breg. ht.....	11.9	(7)					⁴ 12.0	(10)
Cranial index.....	(89.7)	(5)	(82.5)	(52)	77.8	(27)	(83.6)	(18)
Mean ht. index.....	81.4	(1)	84.4	(42)	91.2	(Cal.)	89.8	(Cal.)
Cranial module.....	15.4	(1)	15.4	(37)	15.5	(Cal.)	15.5	(23)
Front. chord.....	11.5	(8)						
Diam. fr. min.....	9.4	(9)	9.5	(48)	9.5	(27)	9.6	(36)
Front. index.....	81.8	(8)						
Fac. ht., upper.....	7.5	(3)	7.2	(29)	7.5	(26)	7.3	(22)
Diam. biz. max.....	14.6	(2)	14.1	(16)	14.0	(22)	14.2	(13)
Fac. ind. upper.....	52.0	(2)	51.2	(20)	53.3	(22)	52.2	(14)
Basion-nasion.....	10.3	(1)	10.5	(28)	10.6	(24)	10.4	(23)
Bas.-alv. point.....	10.6	(1)	10.1	(26)	10.2	(23)	9.9	(18)
Orbital ht., mean.....	3.3	(3)	3.4	(36)	3.4	(26)	3.5	(14)
Orbital br., mean.....	3.8	(3)	⁵ 4.2	(36)			⁵ 4.1	(7)
Orbital index, mean.....	86.6	(3)	82.7	(36)			86.1	(7)
Nasal height.....	5.3	(3)	5.3	(35)	5.4	(27)	5.3	(26)
Nasal breadth.....	2.8	(3)	2.7	(34)	2.7	(26)	2.6	(22)
Nasal index.....	52.2	(3)	51.5	(33)	50.4	(26)	48.9	(22)
Ext. alv. lt.....	5.7	(2)	5.6	(51)	5.7	(25)	5.5	(14)
Ext. alv. br.....	7.0	(2)	6.6	(30)	6.8	(21)	6.9	(12)
Ext. alv. index.....	123.8	(2)	117.7	(30)	118.0	(21)	126.1	(12)

¹ Hooton, 1920; Madisonville series.² Neumann, 1941b. Spoon River focus, pooled series.³ Newman and Snow, 1942; total Koger's Island series.⁴ Measured vertically to apex in the Frankfort position; probably one or two mm. higher than porion-bregma height.⁵ To dacryon.

TABLE 19.—*Individual measurements (cm.) and indices of the femur*

MALE, RIGHT

Collector's No.	U.S.N.M. No.	Site	Max. lt.	Bic. lt.	Diam. a-p. at middle	Diam. lat. at middle	Index of shaft	Diam. max. u. flat.	Diam. min. u. flat.	Platymetric index
MOUND SERIES: (None).										
STEED-KISKER SERIES:										
9-----	379120	Steed-Kisker-----	43.1	42.6	3.0	2.4	80.0	3.3	2.4	72.7
16-----	379122	do-----	43.5	42.9	2.9	2.6	89.6	3.4	2.5	73.5
22-----	379123	do-----	44.8	44.3	2.8	2.3	82.1	3.1	2.3	74.2
57-----	379132	do-----	49.4	38.9	3.0	2.8	93.3	3.7	2.5	67.6
Misc-----	379136-3	do-----	45.4	45.1	3.0	2.8	93.3	3.3	2.5	75.8

MALE, LEFT

MOUND SERIES:										
Misc-----	379108	Pearl mound. C-----	41.6	41.4	2.9	2.5	86.2	3.2	2.3	71.9
STEED-KISKER SERIES:										
16-----	379122	Steed-Kisker-----	43.6	42.9	3.1	2.5	80.6	3.5	2.5	71.4
22-----	379123	do-----	44.5	44.1	2.8	2.3	82.1	3.0	2.2	73.3
57-----	379132	do-----	49.8	49.4	3.2	3.0	93.8	4.0	2.6	65.0
Misc-----	379136-6	do-----	47.8	47.6	3.4	2.6	76.5	3.5	2.6	74.3
Do-----	379136-7	do-----	45.9	45.4	3.2	2.6	81.2	3.5	2.5	71.4
Do-----	379137-8	do-----	44.4	44.0	3.0	2.7	90.0	-----	-----	-----

FEMALE, RIGHT

MOUND SERIES:										
-----	379106	Pearl mound C-----	42.5	41.6	2.4	2.2	91.7	3.0	1.9	63.3
STEED-KISKER SERIES:										
Misc-----	379136-1	Steed-Kisker-----	42.8	42.5	2.7	2.7	100.0	3.6	2.3	63.9
Do-----	379136-2	do-----	42.8	42.5	3.0	2.6	86.7	3.4	2.6	76.5
Do-----	379136-4	do-----	45.4	45.1	2.6	2.3	88.5	2.8	2.2	78.6
Do-----	379136-5	do-----	40.2	39.5	2.5	2.2	88.0	3.1	2.0	64.5

FEMALE, LEFT

MOUND SERIES:										
-----	379106	Pearl mound C-----	42.9	42.3	2.4	2.3	95.8	3.1	2.0	64.5
-----	379107	do-----	43.0	42.2	2.6	2.6	100.0	3.3	2.1	63.6
STEED-KISKER SERIES:										
Misc-----	379136-1	Steed-Kisker-----	42.7	42.4	2.7	2.7	100.0	3.5	2.3	65.7
Do-----	379133-2	do-----	43.2	42.7	3.0	2.6	86.7	3.3	2.5	75.8
Do-----	379166-9	do-----	43.87	43.57	2.78	2.47	85.77	3.3	2.4	72.7

TABLE 20.—*Individual measurements (cm.) and indices of the tibia and humerus*

MALE, RIGHT

Collector's No.	U.S.N.M. No.	Site	Tibia				Humerus			
			Lt. in position	Diam. a.p. at middle	Diam. lat. at middle	Index of shaft	Max. lt.	Diam. max. at middle	Diam. min. at middle	Index of shaft
MOUND SERIES:										
Misc-----	379108	Pearl mound C-----	39.2	2.9	2.3	79.3	-----	-----	-----	-----
Do-----	379114-1	Young mound 1-----	-----	-----	-----	-----	35.3	2.3	1.6	69.6
Do-----	379114-7	do-----	-----	-----	-----	-----	29.9	2.7	1.7	63.0
STEED-KISKER SERIES:										
9-----	379120	Steed-Kisker-----	(34.8)	3.3	2.2	66.7	30.8?	2.1	1.6	76.2
16-----	379122	do-----	38.1	3.3	2.5	75.8	-----	-----	-----	-----
Misc-----	379136	do-----	-----	-----	-----	-----	33.8	2.2	1.7	77.3
Do-----	379136-1	do-----	(37.8)	3.2	2.2	68.3	-----	-----	-----	-----
Do-----	379136-2	do-----	(40.0)	3.2	2.3	71.9	-----	-----	-----	-----
Do-----	379136-3	do-----	35.8	3.3	2.6	78.8	-----	-----	-----	-----

MALE, LEFT

MOUND SERIES: (None.)										
STEED-KISKER SERIES:										
16.....	379122	Steed-Kisker.....	37.8	3.3	2.5	75.8	-----	-----	-----	-----
Misc.....	379136	do.....	-----	-----	-----	-----	33.27	2.2	1.6	72.7
Do.....	379136-1	do.....	-----	3.1	2.2	71.0	-----	-----	-----	-----
Do.....	379136-4	do.....	37.9	3.3	2.1	63.6	-----	-----	-----	-----

FEMALE, RIGHT

[illegible]

FEMALE, LEFT

[illegible]

TABLE 21.—*Comparative measurements (cm.) and indices of male femora. Middle Mississippi*

Measurement or index	Side	Steed-Kisker			Madisonville ¹		
		No.	Mean	Range	No.	Mean	Range
Max. length.....	{ R	5	45.2	43.1-49.4	28	45.3	41.2-52.2
	{ L	6	46.0	43.6-49.8	24	45.1	41.3-49.0
Bic. length.....	{ R	5	44.8	42.6-48.9	29	44.8	40.5-51.5
	{ L	6	45.6	42.9-49.4	24	44.7	40.7-48.7
Diam. a.-p. at middle.....	{ R	5	2.94	2.8- 3.6	27	2.97	2.4- 3.5
	{ L	6	3.12	2.8- 3.4	28	3.01	2.4- 3.5
Diam. lat. at middle.....	{ R	5	2.58	2.3- 2.8	27	2.67	2.25- 3.0
	{ L	6	2.62	2.3- 3.0	28	2.70	2.2- 3.0
Index of shaft.....	{ R	5	87.7	80.0-93.5	27	90.4	76.5-111.5
	{ L	6	84.0	76.5-90.0	28	89.8	78.1-100.0
Diam. max. u. flat.....	{ R	5	3.36	3.1- 3.7	32	3.36	2.9- 3.9
	{ L	5	3.5	3.0- 4.0	28	3.4	3.0- 3.9
Diam. min. u. flat.....	{ R	5	2.44	2.3- 2.5	32	2.58	2.15- 3.2
	{ L	5	2.48	2.2- 2.6	28	2.60	2.2- 3.3
Platymetric index.....	{ R	5	72.8	67.6-75.8	32	77.2	65.7-94.1
	{ L	5	71.1	65.0-74.3	28	76.7	63.9-90.9

¹ Hooton, 1920.



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